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Key Indicators in Canada

by Paul Warren

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Paul Warren

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Micro-economic Analysis Division
18th Floor, R.-H.-Coats Building
Statistics Canada
Ottawa, K1A 0T6

(613) 951-8588
E-mail: john.baldwin@statcan.ca

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Abstract

In recent years there has been considerable international interest in key indicators. This paper surveys recent Canadian attempts to develop key indicators of economic, social, environmental or physical well-being. It classifies and discusses over forty such projects and publications in detail; briefly lists a further twenty projects; and provides references to a number of up-to-date surveys and annotated bibliographies which contain additional examples of indicator development in Canada. The paper provides information on a number of research centres working on indicator development and discusses international indicators which are relevant to the Canadian scene, either because they represent 'prototypes of some particular kind of measure, or else might be regarded as constituting 'best practice' in an area. The paper also examines the motivations behind indicator development and seeks to address the question of whether efforts to extend measurement outside the economic field constitute attempts to "measure the unmeasurable".

Keywords: key indicators, gross domestic product (GDP) measurement, national income concept

"The three pillars on which an analysis of society ought to rest are studies of economic, socio-demographic and environmental phenomena"

Sir Richard Stone, Nobel Memorial Lecture 1984

1. Introduction

Indicators have been defined in many different ways and from many different perspectives, but a useful definition adapted from the Organization for Economic Cooperation and Development (OECD) defines an indicator as:

> *"...a statistic or parameter that, tracked over time, provides information on trends in the condition of a phenomenon and has significance extending beyond that associated with the properties of the statistic itself"*
>
> – *Environmental Indicators: Core Set* (OECD, 1994)

In recent years there has been considerable international interest in such indicators. This paper surveys recent Canadian attempts to develop key indicators of economic, social, environmental or physical well-being. It classifies and discusses over 40 such projects and publications in detail; briefly lists a further 20 projects; and provides references to a number of up-to-date surveys and annotated bibliographies which contain additional examples of indicator development in Canada.

The paper begins by presenting a brief overview of the history of indicator development—both in Canada and internationally—in order to give a sense of how work on indicators in various fields has evolved. This discussion occupies much of the remainder of Section 1, which also examines the motivations behind indicator development—insofar as these can be known—and seeks to address the question of whether efforts to extend measurement outside the economic field constitute attempts to "measure the un-measurable".

Section 2 discusses indicator *frameworks*. Different authors use the term 'framework' in different ways; in Section 2 we attempt to clarify these different meanings. In addition, we highlight the key dimensions along which indicators differ, thereby laying the foundations for subsequent exercises in classification and comparison.

It is arguable that, to a large extent, attempts to quantify progress in the social, environmental and health fields, and to provide alternative measures of progress in the economic field, have arisen as a reaction to the perceived shortcomings of the concept of *national income* as currently measured and published by statistical agencies worldwide. Consequently, we discuss the development of this concept, and early critiques thereof, in Section 3.

Section 4 is the core of this paper. It classifies and details more than 40 recent "key indicator" projects which have been carried out in Canada. These are grouped into one of three classes.

Sixteen projects involve the development of what we refer to as *comprehensive* indicators, i.e., indicators which seek to encompass the totality of economic, social, environmental and physical well-being. A further 14 fail to address at least one of these 4 domains, and are discussed under the heading of *non-comprehensive* indicators. The remaining dozen or so are *themed* indicators, each of which addresses a single issue—such as health, child poverty or job quality.

A number of indicators in each of these three classes focus on providing information at the national (i.e., Canadian) level, others concentrate on providing indicators at the sub-Canadian level (for example, at the provincial or municipal level).[1]

It should be noted that we have deliberately chosen to limit the number of 'state of the environment'-type indicators we discuss. A recent draft survey by Environment Canada identified 865 such indicators; it was felt that discussion of a significant fraction of these would leave little room for the discussion of other indicators.

Section 4 also provides information on a number of research centres working on indicator development.

Section 5 discusses international indicators which are relevant to the Canadian scene, either because they represent 'prototypes of some particular kind of measure', or else might be regarded as constituting 'best practice' in an area.

Section 6 concludes the main body of the paper.

An appendix lists a number of other indicator projects which have been omitted from the inventory of 40 or so discussed in detail earlier in the paper.

1.1 Recent history and motivation

Michalos (2003, p. 7) suggests that the first modern work on societal indicators was carried out in the United States at the instigation of then-President Hoover. In the autumn of 1929, Hoover asked a group, chaired by economist Wesley Mitchell, to produce a report on national trends in social conditions. University of Chicago sociologist William Ogburn was appointed as Director of Research for the project, which resulted in the 2-volume set of reports published as *Recent Social Trends* in 1933 (see Ogburn, 1933).

Although Federal mechanisms were established to improve the collection of social data and the monitoring of social conditions through the 1930s, most forms of social monitoring lapsed during the 1940s and 1950s "*when the nation was concerned with war effort and recovery....*"[2] The modern interest in indicators is arguably a spin-off from the U.S. space program. During the 1960s, NASA commissioned the American Academy of Arts and Sciences to explore the potential side effects of space exploration on American society; the term 'social indicator' was

1. Canada is a federal state. Within the Canadian federation there are 13 provinces and territories, each of which contains a large number of municipalities.
2. Miringoff, Miringoff and Opdyke (undated). These authors also argue (p. 4) that "[*Recent Social Trends*] still stands as America's first and only comprehensive national social report...."

coined by the project director Raymond Bauer, who also bemoaned the paucity of information on social phenomena, pointing out that

> "*[F]or many of the important topics on which social critics blithely pass judgement, and on which policies are made, there are no yardsticks to know if things are getting better or worse....*"

The research effort led by Bauer was the first of a number of attempts throughout the 1960s to establish a system of social accounts that would allow cost-benefit analyses to consider a wider range of outcomes than just those which would manifest themselves in markets via prices and quantities.

Subsequently, a desire to measure the consequences of President Johnson's 'Great Society' program of social and welfare initiatives made the efforts of the would-be developers of social indicators particularly relevant. In 1967, the Annals of the American Academy of Political and Social Sciences published two volumes of essays on social indicators; in the same year Senator Walter Mondale proposed the Full Opportunity and Social Accounting Act which called for a Council of Social Advisors, a national system of social accounting, and an annual social report; in 1969, the Johnson administration published a document entitled *Towards a Social Report*—viewed as "*a preliminary step towards the evolution of a regular system of social reporting*."

In Canada, *Social Indicators of Quality of Life in Canada: A Practical/Theoretical Report* was published by T.S. Palys in 1973, and reported on an attempt to reproduce an earlier U.S. study for 10 Canadian urban centres. Palys' study was one of four which Bates, Murdie and Rhyne (1996) argue constitute the major examples of objective indicator studies conducted in Canada to that point. The others were those by Shulman and Bond (1978), Shulman, Bond and Nelson (1980) and the Peat Marwick Consulting Group (PMCG) (1988). The first two of these were social indicator studies of census metropolitan areas and medium-sized municipalities respectively, and were characterized by the compilation and use of a large amount of non-census data. The PMCG study—commissioned by the Regional Municipality of Hamilton-Wentworth included indicators of the availability of medical and commercial facilities, the amount of green space, pollution and family stability.

Bates, Murdie and Rhyne (op. cit.) argue that studies based on objective data were characteristic of the early 1970s in Canada, but that this focus shifted to subjective measures (and their relationship to objective measures) in the mid to late 70s. A classic U.S. work on the subjective elements of Quality of Life (QOL), published by Campbell, Converse and Rodgers (1976), presented a model which allowed individuals' evaluation of a particular attribute within a domain to depend on their perception of the attribute in relation to internal standards of comparison, and to expectations and aspiration. In short, the contribution of objectively measurable factors to individuals' quality of life was assumed to be mediated by a range of subjective and individual-specific factors.[3] The Campbell, Converse and Rodgers approach was adapted to the Canadian context in the *Quality of Life in Canada* project conducted in the late

3. This perspective appears to be incorporated in the 'Conceptual Framework of Quality of Life' which Bates, Murdie and Rhyne reject in favour of the Community-Oriented Model of the Lived Environment (COMLE) approach in Bates, Murdie and Rhyne (1996b).

1970s and early 1980s by York University's Institute for Behavioural Research (IBR).[4] At the same time the *Survey of Urban Concerns* project—involving a stratified survey of 11,000 respondents—was undertaken by the IBR with a view to gauging urban residents' responses to relevant policy issues as well as the determinants of policy preferences and social potential in the urban environment.

The lack of association between objective and subjective indicators of QOL which was highlighted by several Canadian studies in the late 1970s and early 1980s (i.e., Kuz (1978); Greer-Wootten and Veledis (1983)) might be expected to have led to a feeling that both subjective and objective indicators were needed to measure QOL.[5] Nevertheless "*in the 1980s and 1990s the research focus in objective and subjective indicators moved in different directions*...." (Bates, Murdie and Rhyne, op. cit., p. 4)

As far as *objective* indicators were concerned, a more commercial focus became apparent, both in the form of the "rating places" work—typified by Boyer and Savageau (1981, 1985)—which is targeted at people or firms intending to move, and in the form of neighbourhood level targeted marketing systems which seek to identify the market-relevant characteristics of the inhabitants of spatial units of the order of magnitude of postal zones.

Not all the objective indicator work in the 1980s and 1990s was commercially focused however. Concerns over the possible development of what Wilson (1987) described as an 'underclass' led to some Canadian work (see Davies and Murdie, 1991)—albeit not as much as was carried out in the United States.

As far as *subjective* indicators are concerned, the focus during this period appears to have been on the refinement of such measures. Survey costs may have limited the application of these kinds of measures; nevertheless there are two notable Canadian examples—a 1990 survey of urban issues and attitudes in the Greater Vancouver Region (Hardwick, Torchinsky and Fallick, 1991) and a QOL survey of 4,000 residents of 8 Canadian metropolitan areas (see Reid, 1991).

Bates, Murdie and Rhyne also point to an increased interest in using indicators for planning purposes in the 1980s, and a focus on what they refer to as a more 'holistic' approach to indicator development—by which they mean that indicator projects began to be designed in light of both public concerns regarding *sustainability* and a growing acceptance of the role played by socio-economic factors in determining *population health*.

These concerns are reflected in an indicator framework which formed the basis for a number of projects during the 1990s. In 1991 the Metropolitan Toronto Planning Department released *Towards a Liveable Metropolis*, regarded by many as the origin of what came to be known as the Community-Oriented Model of the Lived Environment (COMLE) approach to quality of life measurement. The model, refined by researchers at York University's Institute for Social Research (ISR) and proposed to the Canadian Mortgage and Housing Corporation as a framework for monitoring QOL in Canadian communities was subsequently evaluated in three Canadian municipalities: Québec, Toronto and Fort McMurray. The model is based on the idea

4. Now known as the Institute for Social Research.
5. As is recognized currently by the Canadian Council on Social Development's *Personal Security Index*.

that "*the liveable metropolis is defined by three interrelated components: economic vitality, social well-being and environmental integrity....*" In addition, the model "*recognizes that cultural congruence, defined as the degree to which things match societal norms and expectations, moderates the effects of the other three components....*" These four items are identified in the model as 'components of liveability'. The COMLE approach differs from the approach taken by Campbell, Converse and Rodgers (op. cit.) mainly in that it groups these 'components of liveability' "*in accordance with typical municipal structure rather than at the conceptual level.*" In other words, the COMLE framework is explicitly designed as a tool for municipalities.

The fact that these new *sustainability* and *population health* perspectives were brought to issues of indicator selection/construction in Canada during this period may well have resulted—at least in part—from two important developments on the international scene.

Firstly, in 1986, in advance of a visit by the U.N. Commission on Environment and Development (a.k.a. the Brundtland Commission), the Canadian Council of Resource and Environment Ministers established a National Task Force on Environment and Economy to address the matter of reconciling public conflicts between Canada's natural resource industries and groups interested in protecting the environment. One of the recommendations made by the Task Force was the establishment of Round Tables on the Environment and the Economy (RTEE) at both the provincial and federal levels, with membership drawn from government, large and small industry, environmental organizations, labour, academia and Aboriginal people. In October 1988, Prime Minister Mulroney announced the creation of a National Round Table on the Environment and the Economy (NRTEE) and by 1990, all of Canada's provinces and territories had established Round Tables and hundreds of local and regional governments across Canada also established Round Tables. Both the provincial and national round tables have played an important role in developing and promoting indicators of sustainability in Canada, and many of the projects undertaken under their auspices are highlighted in Section 4.

Secondly, in the same year as the National Task Force on Environment and the Economy was established, the World Health Organisation (WHO) issued its 'Ottawa Charter for Health Promotion', which included the statements that

> "*...peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice and equity. Improvements in health require a secure foundation in these basic prerequisites...*"

and that

> "*Health promotion works through concrete and effective community action in setting priorities, making decisions, planning strategies and implementing them....*"

A definition of 'a healthy city' was adopted subsequently:

> "*A healthy city is one that is continually creating and improving those physical and social environments and expanding those community resources which enable people to*

mutually support each other in performing all the functions of life and in developing to their maximum potential…."

Together these statements formed the basis of the conceptual model which drove the Healthy Cities Project search for health indicators.[6]

The Canadian Healthy Communities project differed from the World Health Organization project in that it focused on all sizes of local government, and was open to any community that wishes to join. According to Bates, Murdie and Rhyne *"[the Healthy Cities concept] is an outgrowth of social indicators/QOL research, and although still in a formative stage...has already achieved considerable momentum in Canada…."* In Toronto, the Healthy Cities Project led the city to commit to the objective of producing a "state of the City" report every three years, to coincide with civic elections.[7]

Overall, the recent past has seen a number of developments on the Canadian indicator scene. To begin with, the 1990s saw a renewed interest in community-level indicators across Canada. Maclaren (2001) notes that during the decade

"…at least 24 communities produced indicator reports…"

and Reed and Yalnizyan (2000) suggest that

"Under the rubric of social, or societal, indicators, the last decade has seen renewed interest...in the development of better statistical measures of the overall state of aggregate well-being in, and of, our society...In parallel with social indicators, another set of initiatives has arisen in the past 5 years concerned with constructing measures of social capital, the health and sustainability of communities, and the quality of life in communities. These initiatives differ from social indicator development in two ways: they have a more explicitly normative basis, and they are oriented much more to the local level than to the national level…."

In a major project in Ontario—Canada's most populous province—a large number of municipalities undertook quality of life assessments in the late 1990s using a common framework laid out by Malcom Shookner for the Social Planning Network of Ontario.[8]

In addition to a renewed interest in community-level indicators, there has also been a growth in indicators of sustainability over the last decade—and this interest has been reflected in increased funding at the national level. In February 2000, (then) Finance Minister Paul Martin announced a three-year $9 million initiative to develop new environment and sustainable development indicators for Canada, in a way that would better integrate environmental and economic accounting. The money was given to Environment Canada and the National Round Table on the

6. The 'Healthy Cities movement' in Canada is discussed in Ashton (1992) and the authors of the various chapters therein.
7. The City of Toronto produced Toronto's *First State of the City Report* in 1993.
8. More details can be found in Section 4 of this paper.

Environment and the Economy, and work in NRTEE led eventually to the Environment and Sustainable Development Indicators (ESDI) discussed in Section 4 below.

Finally, at the same time as there has been a growing interest in *community* and *sustainability* indicators in Canada, a number of *national* level indicators which seek to address all aspects of Canadian life have also been developed. These are also discussed in Section 4 of this report.

Measuring the unmeasurable?

It is interesting to contrast the motives of those involved in the development of the various alternatives to gross domestic product (GDP) considered in this paper, with the motives of those who developed the concept of GDP.

The GDP concept—as discussed in Section 3—was initially developed largely to facilitate the levying of taxes, and the central planning of wartime economies.

It is arguable that many of the indicators considered in this paper have been developed as a reaction to the popularity of the GDP concept, and its perceived failings.

In addition, and at different times, indicator proponents appear to have been motivated by at least some of the following:

- A desire to challenge the perceived excessive influence exerted by economists and economic considerations in the policy process,[9]
- A desire to measure the impact and consequences of major social initiatives or problems,
- A desire to have the full consequences of economic development for the natural environment 'factored in' to policy decisions,
- A desire to acknowledge the 'new health literature'—a more holistic view of what 'health' means, and how it can be achieved and sustained,
- A desire to measure the performance of government in delivering its objectives, and
- A desire to have the knowledge base necessary to point out the consequences of cuts and perceived 'downloading' associated with restoring fiscal balance of the federal government in Canada in the mid to late 1990s.[10]

9. According to Sharpe (1999, p. 6) there was, underlying at least some of the Johnson administration's efforts to produce a social report (as discussed earlier), "the belief that the creation of the Council of Economic Advisors had institutionalized the use of economic information and the power of economists...."
10. The Federation of Canadian Municipalities acknowledges this explicitly in the introduction to their second report, *Report on the Quality of Life in Canadian Communities.*

Underlying several of these motivations is the notion that income-based measures (i.e., measures of the value of market transactions, and of changes in the value of such transactions in response to policy changes or in the normal course of events) fail to capture the essence of what makes life worth living—but are often treated as if they are the *raison d'être* of human existence.

Three responses can be made to this position.

First, while it is true that the nightly news frequently reports changes in GDP as if such changes were all one needed to know in order to gauge the well-being of a society or economy, that is not how the measure is regarded by those who are involved in its production and dissemination.

Secondly, in attempting to ensure that an indicator attain a profile similar to that enjoyed by measures of national income, some indicator practitioners come dangerously close to claiming that in contrast to GDP a particular indicator *does* capture the essence of what makes life worth living—thereby leaving themselves open to charges that they are attempting to "measure the un-measurable".

Thirdly, whilst GDP's measurement ambitions are (relatively) modest, it goes a long way towards accomplishing those ambitions. In contrast, indicators which aim to measure the 'quality of life' face a large number of challenges, not least of which is the difficulty of achieving some kind of commensurability between the different dimensions that—taken together—constitute 'quality of life'.

Currently, it does not seem likely that attempts to locate social and/or 'quality of life' indicators within a framework similar to that used by the System of National Accounts (SNA)[11] will be successful—at least in the foreseeable future.

In order to characterize an aggregate (national or sub-national) *social* process[12] by an SNA-type framework (for the purposes of measuring the inputs, outputs and outcomes from such a process), and thereby to arrive at some single headline figure of current 'social-wellbeing' it would be necessary to have two important analytical tools available to the would-be producer of a set of social accounts:

- A well-defined set of system dynamics which parameterize the nature of the quantitative relationship between—for example,—the prevalence of church attendance amongst the current cohort of those aged under 16, and the number of unwanted teenage pregnancies;

- Some way of aggregating changes in disparate and heterogeneous measures is to come up with a measure of total change. In the SNA, the contributions of disparate phenomena (such as an increase in the production of apples and/or a decrease in the production of oranges) to some overall summary statistic (such as GDP) are measured and rendered comparable by the use of the common measuring 'yardstick' of money.

11. See United Nations et al. (1993).
12. As opposed to a *production* process.

Notwithstanding the difficulty in forging such tools for use in constructing indicators outside the economic arena however, it is nonetheless arguable that measurement is still possible and useful *provided it is clearly understood what the resulting indicators can and cannot capture.*

2. *Indicator frameworks*

2.1 Introduction

The literature on indicators contains many references to frameworks—but it is not always clear what such references are meant to convey. Most practitioners appear to recognize that the absence of some kind of framework could leave them open to charges of being *'ad hoc'* in aspects of the indicator development process. Some authors seem to use 'framework' largely as a synonym for a list of aspects in which indicators differ.[13] Others use the term to signify a prescriptive list of qualities that should be possessed by any 'good' indicator(s).[14] Others use the term 'framework' to denote a systematic structure of identities or physical/environmental relationships governing the evolution of the issue to be addressed by the indicator(s).

We will use the term in a way which mixes aspects of the first two usages. We start by noting that indicators can be classified along many dimensions. Specifically, we differentiate two sets of characteristics which can be used to classify different indicators:

1. Characteristics and intent of the organization producing the indicator
2. Characteristics of the indicator(s) produced by the organization

The first of these sets of characteristics will include

- Nature of the organization—i.e., government, non-governmental organization
- Focus of the indicator(s)—i.e., health, social capital
- Purpose of the indicator—i.e., to draw attention to an issue, to measure progress against some well defined set of goals
- Scope of the indicator—i.e., everyone in a particular region, women in Canada
- The extent to some kind of systemic structure (i.e., laws of cause and effect, system dynamics, stock-flow relationships) underlie the issue which will be addressed by the indicator(s)—and the degree of certainty surrounding the parameters characterizing such structures.

13. Hardi (1997, chapter 4) and Sharpe (2004) provide examples of such lists.
14. Examples of such criteria may be found in Atkinson et al. (2002) and Hagerty et al. (2001).

Although these 'organizational nature and intent' characteristics may be useful for *classifying* indicators, they do not represent the outcome of choices in the indicator development process—they will likely be 'givens' by the time the technical development process gets underway.

To a large extent, the nature of the organization will determine the focus and purpose of any indicator project which it decides to undertake. For example, any indicator project undertaken by Health Canada will be likely to focus on health and the determinants thereof.

In contrast, the second set of characteristics will be determined by decisions taken in the course of the indicator development process. These decisions may in turn be classified into two types: decisions about the *selection* of the set of variables which will be used to compute the indicator(s), and decisions regarding the *presentation* of the indicator(s).

Among the former we have decisions regarding

- whether there is to be any community involvement in choosing the indicator(s)
- the extent to which statistical considerations will be featured
- the extent to which laws of cause and effect and other systemic structures—if they exist—will be acknowledged in the variable selection process

Among the latter are decisions about

- whether to combine sets of indicators into a single composite indicator
- the units in which to express indicators

The plan of the remainder of this section is as follows; in Section 2.2 we outline some of the differences which may exist between indicator producing organizations in terms of their nature and their motivation in producing indicators. In Section 2.3 we examine characteristics which arise from decisions taken during the process of indicator development. Section 2.3.1 focuses on characteristics arising from selection decisions; Section 2.3.2 on those arising from presentation decisions.

Finally in Section 2.4 we highlight a number of aspects of this indicator 'framework' which will be a particular focus in the remainder of the paper.

2.2 The nature and motivations of indicator producers

Indicators may be classified along a number of different dimensions. Firstly there are a number of fairly evident/obvious dimensions which can be evaluated. One such dimension is the *focus* of the indicator: is it the environment, economic activity and/or conditions, societal 'health', physical (individual) health, sustainability, or something else? Then there is the nature of the *body* producing the index. Departments and ministries from all three jurisdictions or levels of Canada's federal state have been involved in indicator production, sometimes in collaboration

with each other and occasionally in collaboration with foreign jurisdictions. Non-governmental organizations have also produced a wide range of indicators relevant to their respective areas of concern.

A further (and related) dimension could be constructed according to the *purpose* of the indicator. Has the indicator been identified/constructed in order to draw attention to some issue or area of concern? Has it been produced in order to facilitate monitoring of the success or otherwise of some kind of plan[15]—to be part of a 'feedback loop' whereby policy instruments are adjusted in light of the measured values of the indicators of the state? And—if so—is the democratic process viewed as a part of that feedback loop, or are the indicators primarily for use within government (i.e., will they be published, and—if so—how much profile will they receive)?

A fundamental distinction must be drawn between those indicators which seek to integrate notions of sustainability into measures of well-being, and those which do not. The former are able to draw on a stock-flow (i.e., *capital*) framework. Whilst *indicators* can be useful in shedding light on questions like "Is the output of our education system improving?" only a set of stock/flow accounts can address the issue of sustainability: whether some current *flow* is consistent with maintenance of the current *stock*.

Finally under this broad heading we might distinguish—perhaps *ex post*—indicators by the degree of longevity which they have displayed. Did they appear just once? Or have they been around for several years?

2.3 Selection decisions and presentation decisions

2.3.1 Selection decisions

The selection of indicators to represent particular domains can be approached in a number of ways. One of the most important distinctions that can be drawn is between top-down and bottom-up selection procedures. In the former, the indicator selection process is an exclusive one, with little or no participation from those outside a relatively small group. In the latter approach there is a high degree of consultation, often extending beyond those with any expertise pertaining to potential indicators. The consultation process may involve surveys of 'ordinary stakeholders' in order to elicit their views on what should be measured and how. Recent work by the Canadian Policy Research Networks during the development of their 'quality of life' indicators is a good example of such an approach.

In the absence of a formal consultative process, the 'top-down' approach may seek to be guided by a set of principles—be they pre-established (i.e., the Bellagio principles frequently invoked by developers of indicators of sustainability; the U.N. principles cited by Osberg and Sharpe, 2002, in their discussion of the 'insecurity' component of their index of economic well-being) or developed as part of the indicator project (as was done by Atkinson et al. (op. cit.) in the course of their work for the European Union).

15. The Alberta government's *Measuring Up* and the *Community Accounts* published by the government of Newfoundland and Labrador are just two examples of instances in which indicators are explicitly linked to some kind of published plan. See Section 4 for further details.

2.3.2 Presentation decisions

There are also a number of technical dimensions along which indicators differ from a *presentational* perspective.

One is whether the information we refer to as 'an indicator' consists of a single number or a set of numbers, and—if the former is the case—whether the single number is arrived at *via* a set of (weighted) sub-indicators.

Publishing sets containing multiple indicators can be problematic in that members of that set may, on occasion, convey different signals, leading to confusion.

On the other hand, composite indicators give rise to their own set of issues, primarily regarding the weights assigned to different sub-components. Another issue which arises in considering 'indicator construction' is whether the raw data underlying the sub-components of composite indicators are measured in common units. If not, they must be expressed in common units before being aggregated, in order to avoid 'adding apples and oranges'.

This is done in arriving at a figure for gross domestic product (GDP) as a measure of economic activity. The application of a given set of inputs may, given climatic circumstances, result in more apples but fewer oranges being produced and sold this year relative to last year. Is the GDP associated with our domestic fruit growers up or down? Because we can apply the prices of each kind of fruit to the volumes produced, thereby translating each into a common (monetary) measure, we can answer this question.

In contrast, if a river contains *higher* concentrations of organic pollutants this year (relative to last year) but *lower* concentrations of *in*organic pollutants, it may be difficult to say whether the 'state' of the river has 'improved' or 'worsened'. If we can map the consequences of such increases and decreases in some kind of common units however—perhaps the decrease in expected longevity of some kind of aquatic life resulting from the altered concentration of each type of pollutant—such statements *can* be made (provided we agree on whether a decrease in longevity represents a change for the 'better' or 'worse').

In the absence of a natural mapping from movements in members of sets of indicators, or sub-components of composite indicators, into some kind of common scale, one frequently adopted approach is to define some kind of benchmark level (the concentration of (in)organic pollutant in the river in some 'base year'). The 'common scale' employed in this instance is simply the individual indicator's own value in the base year.

In a sense, however, such an approach—correctly understood—merely *postpones* the problem of comparing apples and oranges to the stage at which relative weights to be attached to the benchmarked indicators is considered.

Clearly it is highly desirable, whatever kind of metric is employed for producing an indicator, that measures be comparable over time or between locations and/or jurisdictions.

A fairly subtle—yet arguably profound—issue arises in the construction of composite indices. If such indices are regarded as measuring welfare then there is a sense in which their construction involves the assumption that the characteristics measured in sub-components of the indicator are substitutable.

Using the example of a river once again, the objection can be (and has been) raised that if there is a threshold such that concentrations of inorganic pollutants in excess of that threshold are invariably fatal to aquatic life, it is misleading to allow the impact of an increase in the concentration of inorganic pollutants in that river to be compensated for by a decrease in the level of organic pollutants in the construction of an index.

Whilst this may be strictly true however, it is also arguable that we seldom operate close to such critical thresholds, and that the implicit assumption of substitutability that underlies the construction of composite indices is a valid one at the margin—i.e., where small tradeoffs are under consideration.

2.4 Conclusion

In Section 4 we will focus on just a few of these characteristics. One of these will be the degree of community involvement, in recognition that the *process* of arriving at an agreed set of indicators can be at least as important as the *outcome* of that process. The need for—or at least the desirability of—community participation appears to have been increasingly recognized by indicator practitioners at all levels. In discussing the Glace Bay Community GPI project[16] Poetschke (2003) writes:

> "*GPI Atlantic stress that one of the main outcomes from the Glace Bay pilot project is a better understanding of "the importance of communicating the results [of the initial survey] as a means to enlist the community participation that is essential to the long-term and expanding success of this project....*"

We also follow Sharpe (1999) in placing importance on the nature of the organization producing the indicator(s) and that organization's funding.

Readers interested in learning more about the methodology or framework underlying indicator construction might consult Hardi et al. (1997), Poetschke (2003) on community GPI construction, Smith, Simard and Sharpe (2001) on the capital approach to the construction of sustainability indicators, Born, Simard and Smith (2001) who provide guidelines for the construction of such indicators, or Colman and Messinger (2004).

16. See Section 4 of this paper for more details of the Glace Bay project.

3. GDP: development, criticism, and suggested modifications

> *"From the early days of their formulation by Sir William Petty and Gregory King in seventeenth century England...there have been lively debates as to just what [systems of national accounts] should include, how items ought to be measured, and how they should be put together."* – Eisner (1988), pp. 1611–1612

3.1 Development of the 'national income' concept

The concept of national income is widely believed to have originated in 17th century England, in work by Sir William Petty (1623-1687) and Gregory King (1648-1712).

According to Studenski (1958), three concepts of national income played significant roles in the development of national accounting concepts in the centuries following their original formulation by Petty:

- the *comprehensive production concept* which includes services among the objects of production
- the *restricted material production concept* which includes only material goods, and
- *the restricted market production concept* which includes both material goods and services, but only to the extent that these are produced for market

The distinction between these three concepts arguably foreshadows today's concerns regarding the drawing of the production boundary in national accounts.

Studenski argues that the comprehensive production concept came first, before being temporarily supplanted—for more than a century—by the restricted material production concept.

The physiocrats held what could be described as a *doubly* restricted material production concept of national income. This concept, advanced by Quesnay (1694-1774) and others, defines national income as the sum of consumable commodities only, but goes on to describe agriculture as the only truly productive occupation.

Subsequently Adam Smith (1723-1790)—who also drew the physiocrats distinction between productive and unproductive labour—enlarged the production boundary to take in manufacturing, trade and transportation, allowing (by doing so) that *all* branches of "material goods production"—constituted productive activities.

Criticisms of the restricted material concept were common in the 19th Century (led by writers such as J.B. Say (1767-1832), A.A. Walras (1801-1866) and J.R. McCulloch (1789-1864)), and in his *Economics of Industry* Alfred Marshall clearly signals a return to the comprehensive production concept as the relevant one for national income accountants:

> *"Everything that is produced in the course of a year, every service rendered, every fresh utility brought about is part of the national income...Thus it includes the benefit derived from the advice of a physician, the pleasure got from hearing a professional singer, and the enjoyment of all other services which one person may be hired to perform for another."* – Marshall (1909), pp. 52–53

By 1958, whilst acknowledging that those economies (then) adhering to Marxist analysis still largely based their national income estimates on the restricted material production concept,[17] Studenski was able to argue that:

> *"With the organisation of the United Nations after World War II, and its entrance into the field of national income estimation, the comprehensive production concept achieved the status of an international standard...."*

going on to add:

> *" [Today a] series of new income aggregates, varying in the degree of their "grossness" or "netness" are being introduced...Finally a series of "sector" accounts and "input-output" analyses of production has been developed to show the monetary and product flows in the national economy and in each of its parts."* – Studenski (1958), p. 24

In fact, writing in 1958, Studenski was able to characterize the development of national income estimates in the 20th century to that point as follows:

> *"In the twentieth century, the preparation and publication of annual national income accounts has become universal...revolutionary changes in the status, substance, presentation and usage of national income estimates have been largely precipitated by the social, economic, and political developments that emanated from the two great world wars of the twentieth century. Before World War I, the development was relatively slow; after the war it became more rapid; and after World War II it proceeded at an astounding pace."* – Studenski, p. 142

3.2 Criticisms of the 20th century concept of 'national income'

It is generally recognized—by those inside the national organizations charged with the preparation of national accounts as well as those outside such bodies—that GDP omits consideration of some issues (for example, leisure time, longevity of life, asset stock levels).

For example, whilst stressing that their proposed Canadian Index of Wellbeing (see below) "is not intended to replace GDP" Colman and Messinger (2004) point out that

> *"Surveys indicate that voluntary work in Canada has declined by more than 12% in the last decade [with] serious implications for the quality and quantity of services provided to the sick, elderly. arts and culture. Yet this...is unknown to the vast majority of*

17. Janos Arvay provides a conceptual interpretation of the Material Product System employed by the Council of Mutual Economic Assistance, as well as a historical overview of its use.

politicians and government officials, and has never been discussed in any legislature in Canada. Had the market economy declined by 12%, it would be labelled a serious depression...and Cabinet would be meeting around the clock to find remedies." (p.10)

Whilst criticisms such as this may have received more widespread attention recently, they were being levelled at the concepts underlying sets of national accounts and national income even whilst those concepts were still under development.

Early criticisms

An important aspect of the work carried out during what Studenski refers to as "The Extraordinary Flourishing of [National Income] Estimates During the Period 1918-1939" (p.149) is the extent to which issues which arose during that work explicitly anticipate many of the concerns of more recent critics.

As early as 1922, Bowley draws attention to some of those concerns in a discussion of Marshall's Principles. Discussing Marshall's equation of an *output* measure of what he terms "the true net annual income of the country" with an *income* measure he points out that:

> "*Omitted on both sides of the equation are free gifts of Nature, use of possessions other than houses, services rendered by members of households to each other, and so on.*" – Bowley (1922), p. 2

Furthermore, Bowley notes that in work by Cannan

> "*The expense of living in a highly rented locality, or paying railway or tram fares to avoid doing so, may be deducted when the expense is necessitated by the person's income-producing work.*" – Bowley, p. 2

and

> "*During the war the domestic staffs of many houses decreased and well-to-do women rendered more services to their own households. If the housemaid left and made munitions and the housewife did her work, the total of goods and services was increased by the value of the munitions, but part is cut out of the reckoning because no longer paid for.*" – Bowley, p. 3

Concerns over depletion of natural resources, whether expenditures on 'regrettables' should count towards national income, and the failure to account for non-market production were to resurface in and around the work carried out by economists including Keynes, Mead, Stone and—perhaps most significantly—Kuznets during the 1930s and subsequently.

In fact, Kuznets' critique of the development of national accounts in the United States went beyond highlighting particular issues in the definition of national income as others had done before him, to highlighting the importance of addressing questions regarding national accounting

concepts and definitions within a framework defined by answering the question "What is the ultimate *purpose* of economic activity?"

Kuznets began his work on national income in the 1930s. His approach to and conception of national income are set out in a piece entitled 'National Income' which appeared in the Encyclopedia of the Social Sciences in 1933. According to Kapuria-Foreman and Perlman (1995) Kuznets focused on the income received by individuals as his measure of national income. National income is thus measured the sum of the various factor incomes (wages, salaries, rent, dividends, interest, etc.) as well as all production for self-consumption, and compensation "in kind". Partly influenced by a reading of a draft of this piece, the U.S. Senate passed a resolution in June 1932 directing the Secretary of Commerce to provide national income estimates for 1929, 1930 and 1931 through the Bureau of Foreign and Domestic Commerce.

The Department of Commerce's method of defining and measuring national income differed from Kuznets own however, not only in terms of significant details,[18] but also in the broad approach taken to national income. Bowman and Easterlin (1953) summarized this difference in approach as follows:

> "*It is agreed [we think (Kuznets) would say] that national income (or net national product) is the net output of the economy. But we cannot start to decide what items to include and what items to eliminate in order to make our total net until we decide on the end purpose of the economy. This means, in effect, that there can be no such thing as a completely objective estimate of national income. Rather national income is an attempt to appraise the economy's performance in the light of some generally accepted criterion or criteria. Fortunately, there seems to be fairly general agreement that, in ordinary times, this purpose is to provide commodities and services that contribute to consumers' well-being, both present and future*...." – Bowman and Easterlin, op. cit., pp. 41–42

To Kuznets, national income constituted a 'summary and appraisal notion rather than an analytical entity'. Carrying out such an appraisal would require an understanding of the *goals* of economic activity.

Recent criticisms

Today, Statistics Canada's *User Guide to the Canadian System of National Accounts* (henceforward UGCSNA) includes a discussion of 'Controversy, Convention and Creativity in the Accounts'. A distinction is drawn between 'long standing classic national accounts problems', 'suggested extensions or modifications to the existing framework' and 'more fundamental changes suggested by changing social and economic conditions'.

Under the first of these headings, the issue of where to draw the production boundary is "[t]he single most discussed issue":

18. For example, Kuznets included, but the Department of Commerce excluded, imputed rent of owner-occupied houses.

> *"A coarse net which captures all market or money-exchange transactions in goods and services provides a general measure of gross economic output; sifting this through a finer mesh to exclude intermediate goods and services used by business results in a residual that measures final or net output of market transactions in the money-exchange economy. This is the core measure used in the production accounts."* – UGCSNA, p. 89

Implicit in this description is the possibility of ambiguity in distinguishing intermediate goods. It has been argued that some government output would be more properly classified as intermediate.[19] In fact the Genuine Progress Indicator (in its original form as developed by the San Francisco-based think-tank *Redefining Progress*) treats nearly all government spending as intermediate, the exception being an estimated value of the services to persons generated by the stock of streets and highways (Sharpe, 2004, p. 38).

More generally, it is clear that a measure which captures (only) market or money-exchange transactions will fail to capture some important types of production.[20]

One classic illustrative example which has already been mentioned (in the discussion of Bowley above)—and which is supposedly attributable to Pigou—involves the marriage of an employer and *his* housekeeper. Before the marriage, the services provided by the housekeeper are considered part of economic production, but after the marriage they cease to be measured.

This example is frequently repeated because it illustrates an aspect of the 'production boundary' issue which is particularly controversial. As (deliberately) implicit in the example above, the types of work which have tended to go unmeasured in national accounts are often those undertaken—for the most part—by women.

In 1985, the United Nations International Women's Conference issued a call for the unremunerated contributions of women to be recorded in national accounts; the call was strengthened and repeated by the same conference a decade later.

In 1988, former New Zealand Parliament member Marilyn Waring published *If Women Counted*, which sought to reverse the "invisibility, inaccuracy and damage" of women in traditional economic theory, partly by calling for the inclusion of women's work in traditional accounting systems.[21]

In April 1993, Statistics Canada and Status of Women Canada co-sponsored the Conference on the Measurement and Valuation of Unpaid Work. In December 1995, the System of National Accounts published a report taking stock of the research and development on the valuation of unpaid work (Statistics Canada, 1995) which included estimates of the value of unpaid work for

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19. According to Eisner (1988) "there would appear to be a strong case for viewing a considerable portion of government output as intermediate. We may again cite Kuznets, who had early questioned with regard to government provision of "guns, planes, ships, roads, public buildings, judicial, legislative and administrative services… How much of all this is the mere cost of maintaining the social fabric, a mere *precondition* for net product rather than the product itself?" (p. 1617). UGCSNA refers to the concept of 'regrettable necessities' in this context (p. 90).
20. It is not strictly true that only market transactions are captured of course. *Some* imputation does take place.
21. See Waring (1988) and Landefeld and McCulla (2000), p. 292.

the period from 1961 to 1992. In fact, Statistics Canada's attempts to measure and value unpaid work date back to the early seventies, originating with a review of the measurement of Gross National Product (GNP).[22]

Nonetheless, the latest (international) national accounts guidelines recommend continuing to exclude households' unpaid work from GDP.[23,24] Instead these guidelines suggests the development of alternative measures of production, including unpaid work, within a separate accounting framework. More recently a set of satellite accounts for non-market household production within a national accounts framework has been developed by modifying the United States' National Income and Product Accounts—or NIPAs (see Landefeld and McCulla, 2000 for details).

An example of an instance in which the production boundary is extended beyond the 'money-exchange' economy occurs in the case of non-market activities which parallel market activities, and for which there automatically exists a satisfactory basis of valuation.

As the User Guide to the Canadian System of National Accounts (UGCSNA) notes:

> "*In such instances the non-market activity is considered productive and the production boundary is extended. The principal example is the case of occupation of a dwelling by its owner, but other imputations are made covering the value of farm products consumed directly in farm households, food provided to employees in lieu of wages, and other income-in-kind such as lodging provided to hotel, camp workers and domestic servants. Values are also imputed for the services of government fixed assets owned and used; unlike business, government typically makes no charge against production for the consumption of capital (although this appears to be changing). Finally, a value is imputed for the services rendered by banks and other financial institutions for which they make no explicit charge.*" (UGCSNA, p. 11)

The UGCSNA also acknowledges that

> "*Failure to allow for the use of non-reproducible resources overstates net output in the sense that it includes capital being depleted and makes no provision for the eventual replacement of exhausted natural resources through say, the purchase of imports or exploration activity. If the underlying concept of net output is the level of production that can be sustained without selling capital assets and reducing national wealth (assuming no new discoveries) a depletion allowance would clearly be justified. The present Canadian system does not include an estimate for non-renewable natural resources in the balance sheet account....*" (UGCSNA, p. 96)

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22. See Hawrylyshyn (1974).

23. Inter-Secretariat Working Group on National Accounts, System of National Accounts 1993, para. 6.19–6.22.

24. According to Bos (1994, p. 200), "The limitations of GDP and national income as measures of welfare" are discussed only in the 1993 report. For example "a natural disaster may well lead to an increase in GDP by creating extra demands, even though the community may be no better off than in the previous period if the loss in welfare caused by the disaster exceeds the increase in welfare from the extra production and consumption."

3.3 Alternatives to, and modifications of, the 20th century concept of 'national income'

In formulating their alternatives, many of the researchers detailed below have taken into account Kuznets' view that it is necessary to start with a clear idea of the ultimate *objective* of economic activity (see above).

Nordhaus and Tobin (1972, 1973)

Nordhaus and Tobin develop an extended product which they term MEW (Measure of Economic Welfare). MEW includes imputations for government and household capital services, non-market work[25] and leisure. They subtract output regarded as "regrettables and intermediate" i.e., 'instrumental' expenditures for "activities that are evidently not directly sources of utility themselves but are regrettable necessary inputs for activities that may yield utility". These include costs of commuting to work and government expenditures for police, sanitation, road maintenance and national defence. They also deduct for the "disamenities" of urban life, although *not* for depletion of per capita stocks of environmental capital.

In addition to netting out the capital goods measured by BEA capital consumption allowances and the additional capital goods whose services they impute, Nordhaus and Tobin also subtract the amount of investment that would be necessary to satisfy growth requirements, i.e., to maintain a constant capital to output ratio with consumption increasing at a rate consistent with population growth and technological progress.

Quantitatively, the largest imputation made by Nordhaus and Tobin, is that for the value of leisure, which "dwarfs all others" (Eisner [1988], p. 1628).

Zolotas (1981)

Zolotas constructed a measure of 'Economic Aspects of Welfare' (EAW) for the United States. Like Nordhaus and Tobin, Zolotas views consumption as the ultimate aim of economic activity, and his EAW is similar to their MEW in many respects. Like Nordhaus and Tobin, he includes the imputed value of the services from consumer durable—having deducted private expenditure on such durables. He also deducts (a portion of) private expenditure on advertising, and excludes those private expenditures on health and education which are viewed as of a maintenance nature or not raising the level of welfare. He adds public health and education expenditures deemed to contribute to public welfare, the imputed value of household services, and an imputation for the value of leisure time.

However, Zolotas's approach differs in one important way from that of Nordhaus and Tobin: in arriving at his EAW, Zolotas deducts the estimated costs of resource depletion and the private costs of environmental pollution. Specifically he deducts control costs of air pollution "borne directly by private consumption in the form of increased demand for, say, domestic smoke

25. According to Eisner "The major extension common to all of the accounts except [those of Ruggles and Ruggles] was the imputation of product of non-market household labour."

eliminators, special filters for car exhaust fumes, etc." He also adds substantial "damage costs" of air pollution (but not water or solid waste pollution) based on a survey attributed to Ben-Chieh Liu and Eden Yu (1976).

Jorgensen and Fraumeni (1989)

The approach taken by Jorgenson and his co-authors is perhaps best known for it's inclusion *of human capital* in a set of extended accounts. Recently, this methodology has been used by Ahlroth, Björklund and Forslund (1997) to construct estimates of the human capital stock for Sweden.

It is important to recognize that the full adoption of the Jorgensen approach to human capital would involve the estimation of more than just the human capital associated with *marketed* services (i.e., remunerated labour). An important component of Jorgensen's own approach is the imputation of labour compensation and hours devoted to a range of *non-market* activities. A logical next step has also been taken by Jorgenson in a number of papers: the inclusion of this imputed labour compensation from non-market activities in GDP.

In general, it is important to note—as Fraumeni points out—that

> *"The incorporation of human capital accounts has a tremendous effect on the magnitude of such numbers as gross private domestic product, investment, labour outlay and wealth. Adding an education sector which produces a human capital stock of educated individuals who may enter the labour force reduces measured productivity significantly."*– (Fraumeni, Chap. 6, footnotes)

Jorgensen's approach to estimation of the human capital stock is perhaps most fully developed in Jorgensen and Fraumeni (1989). It is based on the estimation of lifetime income for all individuals in the U.S. population and the allocation of their time between work, school, maintenance and other non-market activities.

As far as non-market activity is concerned, Jorgensen and Fraumeni impute the (cell specific) value of labour compensation for non-market activities by simply multiplying compensation per hour by $[1-\tau]$ where τ is the estimated marginal tax rate for all employed persons—again classified by sex, age and education.

Ruggles and Ruggles (1982)

In 1982, Richard and Nancy Ruggles published a set of Integrated Economic Accounts (IEA) for the United States. These accounts distinguish between market and non-market transactions, with the former being regarded as being more precisely measurable. Under the latter designation, the Ruggles include the rent of owner-occupied housing and non-profit buildings, margins on owner-built homes and farm income in kind, but also include the imputed value of services from consumer and government durables.

Government and household outlays for structures, durable goods and additions to inventories are included in capital formation. Their imputations for the value of services of household durables then includes both capital consumption and net income. Government and household expenditures for structures, equipment, durable goods and additions to inventories are viewed as investment, with a matching increase in gross saving.

Revaluations—i.e., changes in the market value of existing assets and liabilities—are a major factor in determining changes in wealth or net worth the capital account presented by Ruggles and Ruggles[26] "generally dwarfing in terms of current dollars the effects of savings and investments" (Eisner [1988], p. 1647).

Kendrick (1976, 1979, 1987)

John W. Kendrick published his estimates of "GNP, adjusted" in 1976, a further extended version in 1979, and a (still further) extended version in 1987.

In his original work, Kendrick includes imputed compensation for students and the (frictionally) unemployed, in addition to imputed rentals on household durables and inventories, and on institutional plant and equipment and land in excess of NIPA depreciation and interest paid. In addition, in the business sector he accounts for intangible investment (as well as a smaller amount of tangible investment) usually charged to the current account. For the government sector, he includes an adjustment to account for imputed rentals on land, durables and inventory.

In subsequent work, Kendrick adds imputations for unpaid household labour, as well as that of volunteers, and for consumption services provided to employees. He also makes an adjustment for the value of leisure. However, he makes no subtractions for intermediate product of government, work expenses, "regrettables" or "disamenities".

Eisner (1985, 1989)

In a series of works, Eisner and others introduced and explicated their "Total Incomes System of Accounts" (TISA), which are "designed to include the income corresponding to all consumption and capital accumulation, market and non-market, in all sectors of the economy." (Eisner [1988], p.1649). Under TISA the production boundary is extended to include such non-market outputs as the services of government and household capital, unpaid household labour, and the opportunity costs of students' time. TISA also sets up new measures of final product, with services of national defence, roads and the police classified as intermediate, and some commercial media services classified as final expenses related to work are subtracted from income and product, while the values of employee training and human capital formation are added.

26. Presumably such revaluations can be regarded as capturing—at least in part—changes in preferences. They'd also be useful for analytical purposes—i.e., as determinants of consumption. Insofar as assets and liabilities are both held domestically however, we might ask whether anything other than distribution has changed. And if instruments simply reflect the underlying value of real assets, such a revaluation exercise should take care to avoid double counting.

TISA generally values output as the value of all the factor services and resources from which it flows, regardless of the form of payment or non-payment; included are government subsidies and the deficits of government enterprises, as well as the services of volunteer labour and the difference between the opportunity costs of military conscripts (and jurors) and their remuneration. Eisner includes "as a supplement to conventional capital accumulation" net revaluations of tangible assets, as well as "very large" amounts of investment in intangible capital in the form of research and development, education and training, and health.

Where are we now? [27]

Statistics Canada, Canada's national statistical agency, has consistently taken the position that it is important that core accounts be maintained in a manner which is *consistent with the internationally agreed standard*, as laid out in the *System of National Accounts 1993* published by the international agencies represented on the Inter-Secretariat Working Group on National Accounts (see United Nations et al., op. cit.).[28]

In addition, however, Statistics Canada has also recognized the value of extended "satellite" accounts.[29] For example, in response to a request made in 1991, Statistics Canada initiated the development of a system of environmental and resource accounts designed to quantify the links between the environment and the economy.[30] The *Canadian System of Environmental and Resource Accounts* (CSERA) described in Statistics Canada (1997) was the result. The *Concepts* manual for this set of accounts included a brief reiteration of some of the criticisms they were designed to address.[31]

> *"[These] include neglecting to measure the contribution of the environment to natural wealth; treating the receipts from the depletion of natural resources as current income rather than capital depletion; measuring the benefits of the use of the environment but not the costs; and including expenditures to protect the environment as part of gross production. Many of these criticisms are controversial and not all are accepted as legitimate by all parties to the debate."* – Statistics Canada (1997), p. 3

Significantly, as we shall see below, many of these criticisms are similar to those which other agencies and practitioners have sought to address *via* the kind of indicators which are discussed in the remainder of this document. They also reflect—once again—the concerns expressed by

27. The Committee on National Statistics of the National Academies of Sciences in the United States launched a project entitled "A Study on the Design of Nonmarket Accounts" in April 2002 which looks as if it is intended to address a number of the issues around designing nonmarket accounts (including human capital accounts) "that would parallel the market-based national income and product accounts". Barbara Fraumeni, one of Jorgensen's co-authors—and a senior member of the staff of the Bureau of Economic Analysis - has been appointed to this committee.
28. Statistics Canada is contributing to the updating and revision of that standard, which will be published in 2008.
29. 'The 1993 SNA suggested that the use of supplemental or satellite accounts could resolve the long-standing debate between those suggesting a broader production boundary and those insisting on strict adherence to a market boundary....' (Landefeld and McCulla, 2000, p. 292)
30. More recently the National Roundtable on the Environment and Economy made a number of proposals regarding the need for information designed to reflect the extent to which the Canadian economy was operating in a sustainable manner; the origin and nature of these proposals are discussed in more detail below.
31. Daly and Cobb (1989) provide an overview of these.

other writers in the economic "mainstream" (i.e., Zolotas, op. cit.). In other words, the discussion of the origins, perceived shortcomings (and proposed modifications) of current measures of national income carried out in this Section, is highly relevant to the discussion of indicators because the developers of such indicators often share the concerns expressed by—for example—Kuznets, Zolotas, Nordhaus and others.

Given these common concerns, it is natural to ask whether a set of national accounts which had been "fully extended" in the ways suggested by some of those discussed in this Section would be sufficient to render the "key indicators" which have sprung up around Canada (and elsewhere in the world) redundant? We postpone discussion of this question to the Conclusion.

4. Indicator projects in Canada

4.1 Comprehensive indicators

In this section, we provide details on a set of comprehensive Canadian indicators. Comprehensiveness is determined by whether the indicators span all four of the domains of health, economy, social and environment. There are 16 indicators in this section. Some cover all of Canada, others cover provinces/territories, and some cover cities. Nonetheless, they all attempt to encompass all dimensions of life.

Table 1 contains a list of *comprehensive* indicators in Canada.

1. Treasury Board

For almost a decade the Treasury Board of Canada (a Federal government body with responsibilities with regard to the monitoring and approval of Federal government spending) has published an annual report on Federal government performance. The purpose of this report is "[to set] a context for assessing the performance of federal government programs [and to provide] basic information to support dialogue among Canadians about future directions in public policy." Whilst acknowledging that "Many factors beyond the direct control of the federal government influence progress on... the indicators tracked in this report", the report also "promotes a modern management regime in government that is focussed on results." This report has evolved considerably over the decade, particularly in its increasing focus on broad societal indicators as a measure of 'performance'.

In 1999, *Managing for Results* proposed 16 indicators covering 'Health, Environment and Public Safety' (6 indicators), 'Economic Opportunity and Participation' (6 indicators) and 'Social Participation and Inclusion' (4 indicators). The Treasury Board Secretariat also committed to consult parliamentarians and senior government officials on the utility of the proposed reporting framework.

In Spring 2000, the Public Policy Forum consulted (on behalf of the Treasury Board Secretariat) on the indicators and the approach; *Managing for Results 2000* incorporates improvements to the core set of indicators. *Managing for Results 2000* also discusses what

appears to have been perceived as a *distinct* dimension for measurement and reporting in the future—*quality of life*—undertaking to incorporate findings from the Canadian Policy Research Network's (then) ongoing 'quality of life' project.[32] By 2001 the set of 'societal indicators' in *Managing for Results* (now renamed *Canada's Performance*) had grown to 19, and no distinction appears to be made between 'societal' and 'quality of life' indicators.

The latest version of the report (Canada's Performance 2003) contains 20 indicators in four broad areas (economic opportunities and innovation, health, the environment, and the strength and safety of communities). Each indicator is assigned one of three grades 'Improving' 'No definite trend' or 'Declining'.[33] Note that an indicator may exhibit 'no definite trend' "due to *either* a lack of trend data *or* multiple measures with opposing trends".

2. *Conference Board of Canada*

The Conference Board of Canada has produced an annual report entitled *Performance and Potential* since 1996—the 2003-2004 report is entitled 'Defining the Canadian Advantage'. The Conference Board regards *Performance and Potential* as its "flagship publication", which is "intended to make Canadian leaders from all sectors aware of what needs to be done to maintain and improve the high quality of life we have achieved in this country." The report benchmarks Canada's performance against that of "the best countries in the world" on a range of indicators of sustainable development. It also analyzes trends and policy choices on specific issues which it views as likely to affect future standards of living and quality of life.

The 2003-2004 edition features an expanded benchmarking exercise. The six broad categories considered are: economy, innovation, environment, education and skills, health, and society. Under these broad headings the Conference Board looks at 100 indicators, comparing Canada's performance to that of whichever 12 of 24 members of the OECD are the best performers in each category.

Specifically, the first step in the Conference Board's methodology is to identify the top 12 performing country in each of the 6 categories through the construction of an index of standard scores. The second step is to assess the 12 top ranking countries on the basis of their relative performance on a range of indicators in each category.

Presentation of the results uses a popularly understood metaphor from sports: countries are awarded 'gold', 'silver' or 'bronze' in a category depending on whether they achieve positions in the top, middle, or bottom third of the ranking.[34]

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32. According to *Managing for Results 2000*, the government of Canada had already published a discussion paper on 'quality of life' in 1999. *Quality of Life—A Concept Paper* refers to a meeting of government, business and voluntary sector participants held by the Public Policy Forum in June 1999, whose participants decided to launch a project aimed at the development of quality of life indicators.
33. See Environment Canada's '*Environmental Signals: Headline Indicators 2003*' which appears to adopt a similar approach.
34. Canada is said to "miss the cut" in the environment category in 2003–2004.

Table 1. Comprehensive indicators in Canada

Organization	Nature of organization	Scope	Area(s) of focus	Community involvement
Treasury Board of Canada Secretariat (TBS)	Government	Canada	20 indicators cover four 'themes': economic opportunities and innovation, health, the environment, strength and safety of communities.	After publishing 16 societal indicators in 1999, TBS consulted parliamentarians and senior government officials in 2000 and announced it would incorporate findings from Canadian Policy Research Network (CPRN's) 'Quality of Life' project.
Conference Board of Canada	Non-governmental organization	Canada	100 indicators in 6 categories: economy, innovation, environment, education and skills, health, society.	None
GPI Atlantic	Non-governmental organization	Nova Scotia	Time use, natural capital, environmental quality, socioeconomic, social capital.	None
Ontario Social Development Council/Social Planning Network of Ontario	Non-governmental organization	Ontario	Social, economic, health, environment.	According to Sharpe (1999) the Quality of Life (QOL) Index was developed "with input from community groups" (p. 34).
Toronto Community Foundation	Non-governmental organization	City of Toronto and surrounding area	Safety and health, learning, the gap between rich and poor, belonging and leadership, environment, work, getting a good start, arts, culture and recreation, housing, getting around.	"Used consultation, focus groups, questionnaires and a Website to gather information on what matters to the people who live and work in Toronto...We spoke with and heard from community groups, business associations and individual citizens."
Canadian Policy Research Network	Non-governmental organization	Canada	40 indicators cover 9 'themes': democratic rights/participation, health, education, environment, social conditions/programs, community, personal well-being, economy/employment, government.	In the Fall of 2000, 350 Canadians took part in 40 different dialogue groups in 21 towns and cities across Canada and discussed what mattered to them in terms of 'quality of life'.
Index of Social Health	Government	Canada and provinces	15 indicators cover infant mortality, child abuse, child poverty, teen suicide, drug abuse, high school dropout rate, unemployment, average weekly earnings, poverty of those aged 65+, out-of-pocket health expenditures of those 65+, alcohol related road deaths, murders, persons receiving social assistance, gap between rich and poor, and access to affordable housing.	None
Ottawa SPC Quality of Life Index	Non-governmental organization	Metropolitan	12 equally weighted indicators cover health (low birth weight babies, long-term care waiting lists, new cancer cases), the economy (employment and unemployment rates, bankruptcies), the social field (social assistance recipients, children admitted to Children's Aid Society, and public housing waiting lists), and the environment (air quality, toxic spills, recycling).	Unclear

Table 1. Comprehensive indicators in Canada *(continued)*

Organization	Nature of organization	Scope	Area(s) of focus	Community involvement
Pembina Institute	Non-governmental organization	Alberta	51 indicators cover economic well-being (12 indicators); personal-societal well-being (22, including 6 'health' indicators); environmental well-being (17 indicators).	None. "In the case of the Alberta GPI accounts, no values data set from opinion polls was available to guide us on the choice and weighting of indicators."
Edmonton Social Planning Council	Non-governmental organization	Edmonton	Healthy economy (9 indicators); Healthy People (10); Healthy Environment (8); Healthy Community (10). In addition, 7 'Indicators for the Future' and 9 'Indicators for Comparison' are presented.	Committees of experts with experience with indicators were set up; focus groups provided broad perspective on quality of life issues; 2000 questionnaires were distributed. Responses "supported concepts emerging from the committees."
Government of Manitoba	Government	Manitoba	Provincial profile (11 indicators); natural environment (25); economic (19); social well-being (33, including 5 'health').	Workshops were held by government and local community organizations, facilitated by local community members. A workbook based on the proposed indicator set was developed by a working group of representation from provincial government, City of Winnipeg, Environment Canada and provincial NGOs—overseen by the Manitoba Round Table for Sustainable Development. Feedback was also provided via written submission, and a website.
Robert Prescott-Allen	Sustainable development consultant	Global	36 indicators of health, population, wealth, education, communication, freedom, peace, crime and equity are combined into a Human Wellbeing Index, and 51 indicators of land health, protected areas, water quality, water supply, global atmosphere, air quality, species diversity, energy use and resource pressure are combined into an Ecosystem Wellbeing Index. These 2 indices are then combined into a Wellbeing/Stress Index "that measures how much human wellbeing each country obtains for the amount of stress it places on the environment..." and a Wellbeing Index "which shows how far each country is from the goal of high levels of human and ecosystem wellbeing."	None

Table 1. Comprehensive indicators in Canada *(concluded)*

Organization	Nature of organization	Scope	Area(s) of focus	Community involvement
Fraser Basin Council	Consists of "community groups, business and four orders of government, including First Nations."	Fraser Basin	Sustainability indicators cover population, health, education, housing, community engagement, aboriginal and non-aboriginal relations, water quality, air quality, fish and wildlife, income and employment, economic diversification, corporate social responsibility, forests and forestry, agriculture, energy and Fraser River flooding.	The Council's Charter was used as a framework for developing a 'workbook' containing 40 draft indicators for consideration by the 2000 'State of the Fraser Basin Conference'. In 2001 a set of workshops was held around the Basin to invite comment. Opportunities were also presented to mail-in a survey, or complete an on-line survey, and contacting Council staff was also encouraged.
Government of the Yukon	Government	Yukon	Three categories are employed: economy, environment and society. Within these categories, 70 key indicators are laid out, 24 on the economy, 23 on the environment, 23 on community (including 8 which are 'health'-relevant).	"Yukon stakeholders and Yukon Council on the Economy and Environment members were consulted on a draft set of indicators, and the final set revised to incorporate input as appropriate."
Government of Alberta	Provincial government	Alberta	The areas of focus addressed by *Measuring Up* can vary from year to year. Indicators in the 10th edition, (released in 2004) tracked progress on 12 *goals* published in the government's latest 3-year plan. These goals covered the areas of health, lifelong learning, performance of the local government sector, economic performance, infrastructure, crime and safety, and the environment.	None
Institut de la Statistique du Québec (formerly Bureau de la statistique du Québec)	Government statistical agency	Québec	Areas of focus include health; education; work; income; housing; personal security; time-use; government transfers and services; and family violence.	None

3. *GPI Atlantic*

Focusing on GPI, GPI Atlantic was founded as a non-profit society in early 1997 for the purpose of constructing a Genuine Progress Indicator as a measure of well-being and sustainable development for the Canadian province of Nova Scotia. This Genuine Progress Index (GPI) consists of 22 social, economic and environmental components. The GPI includes natural resource accounts, and measures of population health, livelihood security, educational attainment, unpaid work and environmental quality. It counts as decrements some activities that contribute to economic growth—like crime, pollution, sickness, accidents and greenhouse gas emissions.

In addition to its core work, GPI Atlantic is also involved in the development of **community GPIs** (see below) and in work towards a Canadian Index of Wellbeing (see above) as discussed in its publication *Reality Check*.

4. *Pembina Institute*

The focus of the Alberta-based Pembina Institute is also on the Genuine Progress Indicator (GPI) approach. Anielski et al. (2001) discuss the application of "*The Genuine Progress Indicators (GPI) and the sustainable well-being accounting system developed by researchers at the Pembina Institute...*" in Alberta, and provide "*a high level overview of the Alberta GPI Project, which was begun in mid-2000 and completed early in 2001.*"

According to this report Alberta became "the first region in the world to construct a full set of GPI accounts using the new GPI System of Well-being Accounting architecture."

"The GPI accounting system is built on the traditional application of common bookkeeping systems, including ledgers, a balance sheet and a net sustainable income statement that can be used to prepare a sustainability report to citizens...The main features include

- **GPI balance sheet:** The GPI Balance Sheet is a set of measures or indicators that describe the many facets (physical, qualitative, monetary) of the state of well-being of individuals, communities and the environment over a specified period of time. The GPI balance sheet is similar to a traditional accounting framework in that it shows assets, liabilities and shareholder (citizen) equity of all capital or wealth

- **GPI net sustainable income statement:** This is a national or provincial income statement that differs fundamentally from GDP in that it subtracts from our gross output (i.e., GDP) the human, social, ecological and natural resource costs that were incurred to generate that income. It also recognizes the positive contributions of unpaid work, such as volunteering, childcare and housework that lies outside the market yet contribute to well-being. Finally, it recognizes that not all expenditures in the economy represent positive contributions to our well-being; some things like automobile crashes and suicides should be treated as costs, not revenues as they are in current national income accounts and GDP

The GPI accounts for Alberta consist of an integrated set of 51 indicators of well-being based on raw data drawn from various sources. The Genuine Progress Indicators track the changes in the condition of all capital for roughly 40 years, from 1961 to 1999…The GPI System of Sustainable Well-being Accounts, which includes both physical and monetary measures of well-being are structured along the following capital themes:

- **Time-use accounts:** measures of how individuals and households allocate their time for paid work, parenting, eldercare, commuting, housework, volunteerism and free time

- **Social capital accounts:** measures of the condition of households and communities, including measures of poverty, inequality, family breakdown, crime, democracy and social cohesion

- **Human health and wellness accounts:** measures of the condition of our health and wellness, including life expectancy, premature mortality, suicide, obesity, and lifestyles

- **Natural resource and environment accounts:** measures of the condition of natural capital, natural ecosystems, and the environment, including ecological footprints,[35] forests, agriculture, peatland, wetlands, non-renewable energy, energy efficiency, fish, wildlife, parks and wilderness, air quality, water quality, carbon budgets, hazardous waste, and landfill waste

- **Economic accounts:** measures of traditional finance and built capital conditions including the GDP, trade, disposable income, weekly wages, consumption expenditures, taxes, savings, debt, and public and private infrastructure service values

The time-use, social capital and human health and wellness accounts were clustered into a personal-societal well-being account from which a composite GPI societal well-being index could be derived. Natural resource and environmental accounts were consolidated to derive a GPI environmental well-being index, and the economic accounts were used to derive a GPI economic well-being index.

5. *Index of social health*

Based on work by Marc Miringoff at the Institute for Innovation in Social Policy, the Index of Social Health (ISH) was estimated for Canada by Zeesman and Brink (1997). According to Reed and Yalnizyan (2000) "[the Index of Social Health] approach rejects economic statistics as appropriate indicators of society's general well-being and proposes…a set of 15 social factors...".[36]

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35. Hardi et al. includes a discussion of the 'ecological footprint' concept, including the statement that "if all people on earth had the same footprint as the average American (five hectares), we should need three Earths to support everyone!" (p. 50). The April 2004 edition of *Reality Check* includes a discussion of the 'ecological footprint' and an interview with one of its originators.
36. Sharpe (1999) lists *16* (p. 20).

According to Sharpe (1999) Miringoff's 'social factors' (a.k.a 'social issues') deal with health, mortality, inequality and access to services. An interesting feature of Miringoff's approach is its use of separate indicators for different age groups. This is an approach which is felt to be potentially useful because "1) age groups are universal, with everyone potentially passing through all age groups; 2) age groups are conceptually integrated across components, creating a holistic framework; 3) age groups highlight several important contemporary trends, such as deteriorating status of children and improved status of the elderly; and 4) age groups are readily understood by the public" (Sharpe, 1999, pp. 20–21).

Not all of the indicators apply to all age groups, though five (homicide, alcohol-related fatalities, food-stamp coverage, access to affordable housing and the gap between rich and poor) do. Three indicators apply only to children (infant mortality, child abuse, child poverty), three to youth (teen suicides, drug abuse, high school dropouts), three to adults (unemployment, average weekly earnings and health insurance coverage) and two indicators apply to the elderly (poverty of persons over 65 and out-of-pocket health costs for the elderly).

For comparability/measurement purposes the ISH uses a Model Year to provide a standard of performance, combining the best achievements in all areas. Annual performance is measured against best past performance rather than an ideal standard. For purposes of standardization, each indicator is measured in comparison to its best and worst performance over the period, with the former scored at 10 and the latter at 0.

In constructing a Canadian version, Zeesman and Brink (1997) made some changes to Miringoff's index, in order to better reflect the Canadian context within which the ISH was being measured. Specifically the proportion of the population with no health insurance was dropped (given universal health coverage in Canada) and the food stamp indicator was replaced with the number of social assistance beneficiaries.

6. *CPRN quality of life indicators*

According to Sharpe (2004), the objective of the Quality of Life indicators produced by the Canadian Policy Research Network (CPRN) was "to go beyond simple economic indicators of well being such as GDP and present indicators of what matters to Canadians. These indicators also allow tracking of changes in the different aspects of quality of life over time." (p. 53)

CPRN's publication 'Quality of Life in Canada: A Citizens' Report Card' presents data on 9 'themes' determined by 40 groups of "citizens from many walks of life" who met "in locations across the country". These groups identified the themes and the priority of those themes. "Experts then helped to identify indicators for each of the themes, and a group of the original citizen-participants reviewed and approved the selection."

In 2002, the CPRN produced a 'report card' assigning scores to indicators in nine domains: democratic rights and participation, health, education/learning, environment, social programs and conditions, community, personal well-being, economy and employment, and

government. The 'report card' assigns scores to the various indicators, showing improvements, changes for the worse or no change. The aim of the project—according to Sharpe is the "[d]iscussion of policy issues from both the point of view of citizens and experts".

7. *Ontario Social Development Council quality of life index*

The Ontario Social Development Council (OSDC) published its first report on 'The Quality of Life in Ontario' in 1997. Its report of November 1998 "received widespread media and public attention due to the ratings of local [Quality of Life Indices] which were done by 12 of our community partners. Comparisons of the quality of life across communities and with a provincial measure seem to have public appeal...."

The OSDC define 'quality of life' as "The product of the interplay among social, health, economic and environmental conditions which affect human and social development."

As a result they incorporate measures in each of these four domains. Specific measures included under these broad headings are children in the care of Children's Aid Societies, social assistance recipients, social housing waiting lists, low birthweight babies, elderly waiting for placement in long-term care facilities, new cancer cases, the number of people unemployed, the number of people employed, bankruptcies, the hours of moderate/poor air quality, environmental spills, tonnes of solid waste diverted from landfill.

The OSDC notes that "the purpose of the Quality of Life Index (QLI) is to provide a tool for community development which can be used to monitor key indicators. The QLI can be used to comment frequently on key issues that affect people and contribute to the public debate about how to improve the quality of life in our communities and our province."

8. *Ottawa Social Planning Council quality of life index*

In Fall 2001, the Social Planning Council of Ottawa released 'The Quality of Life in Ottawa: 1990-2000'. The report considers social, health, economic and environmental indicators. It is a composite index with 3 indicators under each of these headings, making a total of 12. 'Each community that produces a Quality of Life report uses these 12 indicators to achieve a basis for comparison across regions. The index is calculated by combining the changes in each indicator over time, with actual data for each indicator in the index being pegged at a value of 100 in the base year (1999). Each indicator is given equal value; no weighting factors are used. 'A methodological report by the Ontario Social Development Council provides a summary of the criteria used to identify and select these 12 indicators, along with a description of how the index is calculated'.[37]

The indicators used in constructing the overall index are: tonnes of solid waste recycled, number of spills of toxic substances, hours of moderate to poor air quality, percentage of low birth weight babies, number of elderly on the waiting list for long-term care, new cases of cancer, the bankruptcy rate, population who are unemployed, population who are employed,

37. Manual for Community Partners (1999).

number of households on the waiting list for social housing, the number of children admitted into care, the number of social assistance beneficiaries.

9. *Government of Manitoba*

The Manitoba Government produced the 'Provincial Sustainability Indicators Initiative' and (under the auspices of Manitoba Conservation) the 'State of the Environment Report for Manitoba 1997; Moving Towards Sustainable Development Reporting'.

According to Hayward (2003) the government of Manitoba, together with Manitoba Conservation and the Manitoba Round Table for Sustainable Development has "accepted 23 indicator categories that will help establish a set of indicators for sustainability reporting that will provide information on the key vital signs of Manitoba's environment, economy, human health and social well-being, and discuss the linkages and interdependencies. Other goals include the establishment of provincial targets and policies for sustainable development, and to provide a measure of performance in achieving provincial goals and objectives."

In June 2000, workshops were held by Manitoba Conservation, co-hosted by local community organizations, facilitated by local community members. A workbook based on the proposed indicator set was developed by a working group composed of representation from all provincial government departments, the City of Winnipeg, Environment Canada and several provincial NGOs—overseen by the Manitoba Round Table for Sustainable Development. Feedback was also provided via written submission and a website.

10. *Government of the Yukon*

The Yukon Territory's Sustainable Progress Indicators framework consists of 63 economic, environmental, and social indicators designed to measure progress towards the goals of the Yukon Economic Strategy (which explicitly recognizes the principles of sustainable development).

11. *Edmonton Social Planning Council*

Edmonton Social Planning Council has produced a report on LIFE (Local Indicators for Excellence) since 1997. The purpose of the 1997 LIFE report was to introduce the indicators and provide a point of reference for each one. The LIFE project aims to provide a report on health, environmental, social and economic indicators which is accessible and comprehensive.

A steering committee and four working committees (one for each of these four domains) were involved in the early stages of the project. The steering committee developed a reporting format for the working committees, and established principles and criteria for the selection of indicators, as well as reviewing and approving working committee documents. The working committees were responsible for defining the domains and identifying a set of indicators that would provide a comprehensive view of that element. The committees consisted of individuals with expertise in a particular area and a familiarity with indicators.

The working committees ensured that each measure met all the criteria established by the steering committee.

Focus groups were also used to pinpoint key aspects of quality of life in Edmonton. Approximately 150 people from a cross section of the community provided a broad perspective on quality of life issues. At the same time as the focus groups were being held, over 2,000 questionnaires were distributed to individuals from various sectors of the community. In addition to these groups, a number of focus groups were held in collaboration with the Muttart Foundation. Responses supported the concepts emerging from the working committees.

In 1998, Edmonton LIFE took the first step towards identifying emerging trends by reporting comparative data. The most recent report (*Edmonton Life 2002*) is the first to include selected indicator data from other communities—a development "made possible by the City of Edmonton's commitment to the Federation of Canadian Municipalities' *Quality of Life in Canadian Communities* project.

Edmonton Social Planning Council also produces a Social Health Index for the city.[38]

12. Toronto Community Foundation

The Toronto Community Foundation has produced 'Vital Signs' since 2001. 'Vital Signs 2003' takes a report card format, assigning 5 grades in 10 areas. Areas graded are: the gap between rich and poor; safety and health; learning; housing; getting around; getting started in Canada and in life; arts, culture and recreation; environment; work; and belonging and leadership.

13. Prescott-Allen's Indexes of the Wellbeing of Nations

According to Sharpe (2004) Robert Prescott-Allen's framework "attempts to integrate indicators of sustainable development with indicators of economic and social well-being."[39]

Prescott-Allen has developed a 'Barometer of Sustainability' and a methodology for "Wellbeing Assessment". The latter is an approach to assessing sustainability that gives equal weight to people and ecosystems, and can be used to make cross-national comparisons. It provides a 'systematic and transparent' way of determining the main features of human and ecosystem wellbeing to be measured, choosing the most representative indicators of those features, and combining those indicators into (1) a Human Wellbeing Index; (2) an Ecosystem Wellbeing Index; (3) a Wellbeing Index; and (4) a Wellbeing/Stress Index—the ratio of human wellbeing to ecosystem stress. The first of these distils 36 indicators of socioeconomic conditions, and is not limited to monetary indicators; the second synthesizes 51 indicators of the state of the environment; the third combines the first two and shows the result on a graphic scale (the 'Barometer of Sustainability') showing how far each country is

38. Referenced and detailed in Reed and Yalnizyan, p. 5.
39. It is criticised earlier in Sharpe (2004) for its lack of a 'framework' for domain selection.

from the goal of high levels of wellbeing (of both humans and ecosystems); the fourth measures the degree of environmental harm done by each country for the level of development it achieves. Both this measure and the third measure seek to measure people and ecosystem together "to compare their status, show the impact of one on the other, and highlight improvements in both."

Prescott-Allen's Wellbeing Assessment method was developed and tested with the support of IUCN—the World Conservation Union and the International Development Research Centre.

14. Fraser Basin Council

The Fraser Basin Council was created in 1997, with a mandate to protect and enhance the Basin's social, economic and environmental sustainability into the future. In May 2000, the Council hosted an indicators workshop and compiled an inventory of potential sustainability indicators. A workbook and survey were also developed to provide Council partners to participate in the indicator selection process. At its State-of-the-Fraser-Basin Conference in November 2000, the Council asked participants to participate in the process of identifying indicators—a collection of 15 to 20 quantitative measures associated with 'key social, economic, environmental and institutional issues' designed to reflect 'the four Directions and 26 Goals of the Charter for Sustainability'. It was believed that the development of such a set of indicators would not only help fulfill the Council's commitment to report on progress towards sustainability in the Basin, but would contribute to other goals, such as increasing public awareness of sustainability issues, and informing and influencing policy development. Subsequently regional workshops were held around the Basin. The resultant sustainability indicators cover population, health, education, housing, community engagement, aboriginal/non-aboriginal relations, water quality, air quality, fish and wildlife, income and employment, economic diversification, corporate social responsibility, forests and forestry, agriculture, energy, and flooding.

15. Government of Alberta

Measuring Up has been published by the Alberta Government since 1995. It is designed to meet that government's commitment to be open and accountable as required under Section 10 of the *Government Accountability Act*.

The annual report is part of Alberta's structured performance measurement system (see Alberta Treasury, 1996). As originally envisaged, this system was to have a tiered format, with different categories of measures used to report on performance. The first tier was to consist of the core government measures reported in Measuring Up—macro level measures reporting on high level outcomes that are the priorities of Albertans. The second tier consists of key ministry measures, selected by ministries, focused on outputs and outcomes of ministry policies, and providing background information feeding into the core government measures. The third tier consists of management measures—mainly for internal use.

Measuring Up was also designed to include "a series of societal indicators [to] track important trends in our society, such as education, health and wellness, social investment and

human capital...." It is important to note that the set of core measures presented in *Measuring Up* "is evolving over time" as the government's goals under the headings of 'People, Prosperity and Preservation' change.[40] *Measuring Up* can be viewed as a report by the Alberta Government on its progress on meeting the goals established under these three headings, which are published in the three-year government business plan published as part of each budget.

16. Government of Québec

In 1996 the Bureau de la statistique du Québec released 'Les conditions de vie au Québec' (see Nobert et al., 1996). In more than 300 pages, data are presented on socio-economic conditions including those pertaining to the areas of health, education, work, income and family violence.

4.2 Non-comprehensive indicators

In this section, we provide details on a set of non-comprehensive Canadian indicators, which do *not* span all four of the domains of health, economy, social and environment. There are 14 initiatives in this section.

1. Federation of Canadian Municipalities

In March 2001, the Federation of Canadian Municipalities (FCM) released its second *Report on Quality of Life in Canadian Communities*.[41] The report, and the Quality of Life Reporting System (QOLRS) on which it was based, arose from a study commissioned by the FCM in 1996 on the likely impact of changes to the funding structure of federal transfer payments. When, on reviewing that study, the FCM concluded that its members lacked the tools and data to debate the impact of these changes—and other policies—on behalf of their members, the largest urban members of the FCM recommended the creation of a reporting system to monitor the quality of life in Canadian communities. FCM immediately began to develop the QOLRS.

Eight complete sets of indicators are reported on in the March 2001 report. These are:

- *population resources measures* (a profile of population characteristics, population growth, education and literacy levels, cultural diversity, immigration and the age structure of the population), which provide a basis for the monitoring of long-term demographic change

- *community affordability measures* which compare levels of income with the cost of living

40. For example, in 1996 the core measures included 'Births to Children'—by 1999-2000 this had been dropped, but 'Heritage Appreciation' had been added.

41. The first report was released in May 1999. On April 14th 2004 the FCM released *Highlights Report 2004*.

- *quality of employment measures* which monitor employment dimensions and trends, such as equity and the distribution of employment, partial employment and unemployment among population groups

- *quality of housing measures* including affordability of housing to rent (relative to prevailing incomes), percentage of homes in need of repair, vacancy rates and housing starts

- *community stress measures* which reflect social problems and examine variables related to vulnerable groups, and include the incidence of low income, the incidence of lone-parent families, and the incidence of crisis calls, bankruptcies and suicides

- *health of community measures* which reflect the rate of premature deaths (before 75), infant mortality, the percentage of babies born with low birthweights, and workdays lost due to illness or disability

- *community safety measures* which reflect rates of crime and violence, youth crime, and the rate of unintended injuries

- *community participation measures* which reflect the involvement of citizens in their community, and include political participation (voter turnout), daily newspaper circulation, charitable giving and support for community projects as measured by contributions to the annual United Way campaign.

Twenty municipal governments participate in the FCM's Quality of Life Reporting System, and are featured in the regular reports. They are the cities of Vancouver, Calgary, Edmonton, Regina, Saskatoon, Winnipeg, Greater Sudbury, Windsor, London, Toronto, Hamilton and Kingston. In addition the regional municipalities of Waterloo, Niagara, Halton, Peel, Halifax and York participate, as does the Communauté métropolitaine de Québec. It is perhaps interesting that as many elected governments have agreed to participate in an exercise which by its nature will on occasion likely expose them to unfavourable comparisons with other governments, in full view of their electorates.

The presentation of the *Highlights Report* published in 2004 differs from that in the March 2001 report, but is retrospective in the sense that the values of many highlighted measures is given for 1991 and 2001 (often by being presented as a growth rate, broken down by different municipalities). This time the report is organized according to six 'QOL Factors': Local economy, Natural Environment, Personal Goals and Aspirations, Fairness and Equity, Basic Needs, and Social Inclusion (a 'Quality of [Natural] Environment' measure was 'under development' at the time of the 2001 report).

Table 2. Non-comprehensive indicators in Canada

Organization	Nature of organization	Scope	Area(s) of focus	Community involvement
Federation of Canadian Municipalities	"national voice of municipal government"	20 municipalities which— between them—"account for 40% of Canada's total population"	[H]undreds of variables that measure changes in social, economic and environmental factors" are structured into 75 indicators covering 6 'quality of life factors': local economy, natural environment, personal goals and aspirations, fairness and equity, basic needs, social inclusion.	A Technical Team of representatives from participating municipal governments oversaw the development of the indicators.
National Round Table on the Environment and the Economy (NRTEE)	"independent advisory body" set up and funded by government	Canada	The indicators focus on the environment (five indicators) and education (one indicator).	Consulted with 'cluster groups' of experts; "broad range of stakeholders".
Fraser Institute	Research organization	Canada	The index of living standards developed by Chris Sarlo of Nippissing University covers real per capita household consumption, real per capita household income, the proportion of the population not in poverty, an index of household facilities, the percentage of the population with a post-secondary degree or diploma, one minus the unemployment rate, life expectancy, and an indicator of household wealth (net worth per capita). These are weighted equally in his proposed index.	None
British Columbia Government	Government	British Columbia	Four 'basic indicators' (each a composite of three-four variables) focus on human economic hardship, crime, health problems and education concerns. Two 'additional indicators' focus on particular 'target' groups (children, youth).	None
Osberg and Sharpe	Academic researchers	Canada	'Economic well-being'—arrived at by weighting consumption flows, stocks of wealth, equality, and security.	None
Status of Women Canada	Government department	Women in Canada	Indicators are organized in three domains: income, work, and learning.	Unclear
City of Winnipeg	City council	Metropolitan	Indicators under development	Development of the indicators was initiated by 400+ participants in the public consultation process on the *Plan Winnipeg 2020 Vision* document.
City of Hamilton	City council	Metropolitan	The City of Hamilton's annual sustainability 'Report Card'—prepared under the auspices of the 'Vision 2020 Hamilton' program—awards grades under 14 headings: local economy, agriculture and rural economy, natural areas and corridors (protected), water resource quality, waste generation and management, energy use, air quality, mode of transportation, urban land use, arts and heritage, health and well-being, safety and security, education, community well-being and capacity building.	Indicators were "chosen through a community process...."

Table 2. Non-comprehensive indicators in Canada *(concluded)*

Organization	Nature of organization	Scope	Area(s) of focus	Community involvement
Canadian Council for Social Development (CCSD)	Research organization	Canada	CCSD's *Personal Security Index* is designed to measure annual changes in the security of Canadians according to three key elements: *economic* security, *health* security and *physical* security.	The "perception index" component of the index is based on responses to a nationwide survey.
Newfoundland Community Accounts	Provincial Government	Newfoundland and Labrador	From the Ground Up examines aspects of the 'quality of life' under the following headings: 'Healthy people', 'Educated People', 'Prosperous and self-reliant people', 'Vibrant, Distinctive and Supportive Communities', 'Safe communities', 'Sustainable Regions: Demographics', 'Cross Linkages', and 'Quality of Life'.	Indicators were selected by Dr. Doug May [of] Memorial University, [with] advice from Premiers Council, Regional Steering Committees, academics and government departments.
Alberta Roundtable on the Environment and the Economy	Provincial 'Round Table'	Provincial	Almost 60 indicators were produced: around two thirds were focused on environmental concerns; the rest focused on 'quality of life' and economic concerns.	An Indicator Working Group supervised a project team whose plan provided for consultation with ARTEE members, specialists and others.
Glace Bay GPI Research Society	Community based organisation	Local community	"[V]olunteers from a wide variety of community associations in Glace Bay have identified five sectors that are 'Genuine Progress Indicators' of our quality of life. These are: The Well-being of Our Families and Households; Our Communities—our volunteer and care-giving networks; The Quality of our Jobs; Peace and Security; The Ecological Footprint."	After these broad 'sectors' were identified, 2,000 surveys were administered to community residents, using sectors as an initial focus.
Department of Indian Affairs and Northern Development	Government department	Yukon, Northwest Territories and Nunavut	Areas covered include demography, income, labour force, education and social indices.	None
City of Montréal	Local government	Montréal	Local democracy; community dynamics; joint action; socialization; neighbourhood economy; town planning; environment; urban safety.	Unclear

2. *National Round Table on the Environment and the Economy*

The (then) Minister of Finance announced the Environment and Sustainable Development Indicators Initiative in the 2000 Federal Budget, stating that such indicators "could well have a greater impact on public policy than any other single measure we might introduce...."

Development of these indicators was undertaken by the National Roundtable on the Environment and the Economy (NRTEE). From the outset, this appears to have been a careful and methodologically self-conscious exercise. The approach eventually adopted (the "capital approach") was proposed and outlined in Smith, Simard and Sharpe (2001); subsequently a set of technical guidelines for indicator selection were drawn up (see Born, Simard and Smith, 2001) and provided to the advisory 'cluster groups' mandated to provide the Environment and Sustainable Development Indicators (ESDI) Steering Committee with a range of possible indicators from which to select.

Outputs from this initiative took the form of "a small set of easily understood indicators" together with the recommendation that Statistics Canada publish these new indicators annually, and that the Minister of Finance incorporate them in the federal budget statement.

In addition, the NRTEE recommended that the federal government expand the current System of National Accounts to include new accounts covering natural, human and social capital, and investment in monitoring and information systems for the gathering of national-level information on environmental issues.

The indicators whose annual publication NRTEE recommended were

- Air Quality Trend Indicator
- Freshwater Quality Indicator
- Greenhouse Gas Emissions Indicator
- Forest Cover Indicator
- Extent of Wetlands Indicator
- Educational Attainment Indicator

A number of important issues arose in the course of arriving at these indicators. NRTEE (2003) states that

> "*One of the most contentious issues was whether and how to aggregate information about Canada's overall capital. Much of the discussion here focused on the prospects for developing an aggregated, monetized indicator of the net value of national capital. The benefits of a single aggregated indicator of national sustainability was weighed against the difficulty of monetizing all types of capital. More fundamentally, an aggregated indicator is only appropriate if it can be assumed that all types of capital can be substituted for one another and that this is desirable. Because of the controversial nature of this issue, prudence dictates that Canada's information system not assume that all forms of capital are entirely substitutable.*" (p. xx)

and later

> "*There was widespread support among the participants in the ESDI Initiative for developing indicators based on a capital model to address intergenerational issues. Several participants, however, felt strongly that there should have been a greater emphasis on measurement of intragenerational equity.*" (p. xx)

3. *British Columbia Government*

British Columbia Statistics (BC Stats) has developed an index which incorporates socio-economic indicators for 28 regions in the province (summarized on pp. 54–56 of Sharpe 2004). Four 'basic indicators' focus on human economic hardship, crime, health problems and education concerns. Two 'additional indicators' focus on particular 'target' groups (children, youth). The indexes are composite (i.e., aggregated) indexes. They are intended to provide cross-sectional analysis at a point in time, hence they "are not designed for temporal analysis.." (BC Stats, p. 2).

In addition to these six basic indicators, an 'overall socio-economic index' is also produced in order to summarize the results of the six composite 'sub-indices'.

4. *Osberg and Sharpe*

Osberg and Sharpe (1998) develop an Index of Economic Well-Being (IEWB) for Canada. Their approach is based on Osberg (1985), and is based on four components or dimensions of economic well-being. These are:

- Effective consumption
- Societal accumulation
- Poverty/inequality
- Insecurity

Osberg and Sharpe recognize that (systems of) social and economic statistics have become "a crucial part of the informational feedback loop of public policy" and argue further that "If the democratic debate on economic policy is to be fruitful, it would seem desirable to separate issues of measurement from the debate on values." They highlight their explicit recognition that the weights attached to each component of their (composite) index will vary depending on the values of different observers.[42]

Elsewhere, Osberg and Sharpe (2002) stress their focus on the *economic* aspects of well-being, acknowledging that their IEWB does not attempt the same breadth as indices such as the GPI or the United Nations' Human Development Index, and "is more in the spirit of the

42. Presumably the developers of other composite indices would concede this point. However Osberg and Sharpe make a good point when they state that "The construction of measures of economic well-being can be seen as a problem in the optimal aggregation of information. If the objective is to improve the quality of public decision making and political debate, excess aggregation is not helpful, because it does not allow value judgements and statistical judgements to be separated."

Measure of Economic Welfare (MEW) developed by Nordhaus and Tobin (1972) three decades ago...."

A difference between their earlier paper (whose focus is on Canada) and their later (which looks at a selection of OECD countries) is that the former subtracts *regrettable expenditures* from personal consumption, while data limitations precluded this approach in the latter.

A rather profound difficulty is captured by Osberg and Sharpe's treatment of the problem of assigning 'Canada's share' of the costs of greenhouse gas emissions. The environment is of course one of the 'global commons', and the issue of 'costing the depletion of the global commons' arguably presents an important conceptual/philosophical difficulty. Furthermore, should we include component measures over which our (i.e., Canada's) control is only partial if the purpose of the composite measure is to be "a crucial part of the informational feedback loop of public policy"? Thinking through the "feedback loop" analogy illustrates the problem—such loops link a measure of the 'state' of a system (in this case, a measure of the environmental 'capital stock') to a 'control'. Some would argue that Canada's attempt to prevent global warming by reducing domestic greenhouse gas emissions is akin to attempting to control the traffic flow around one on the highway by using ones own brakes.

5. *Fraser Institute*

An exploratory Index of Living Standards (ILS) was developed for the Fraser Institute, based on eight components. These are: real per capita household consumption, real per capita household income, the proportion of the population not in poverty, an index of household facilities, the percentage of the population with a post-secondary degree or diploma, one minus the unemployment rate, life expectancy, and an indicator of household wealth (net worth per capita).

The Fraser Institute also published 'Critical Issues Bulletin: Environmental Indicators; 5th Edition'.

6. *Status of Women*

The first edition of Economic Gender Equality Indicators was released by the Federal-Provincial/Territorial Ministers Responsible for the Status of Women in October 1997. A second edition was released in 2000.

In terms of presentation, the indicators use ratios of women to men to show the differences between the sexes for a given measure of equality. A ratio of 1.0 means women and men are equal. An index above or below 1.0 indicates inequality or imbalance for that measure: below 1.0 women have less than men; above 1.0 they have more. A gap that is closing over time—i.e., converging on 1.0—may be the result of changes in women's situation, or men's, or both.

The indicators are organized in three domains: income, work, and learning.

Under these broad headings, a total *income* index compares the average total income of women and men, another compares total after-tax incomes, a third compares total *earnings*. There is also a total workload index comparing the sum of paid and unpaid work by women to that by men, separate paid and unpaid work indices, and three separate work indices for those employed full-time in three different types of living arrangements (dual earners with young children, primary earners with young children, and those without young children). Another index captures relative hours spent on child care by those employed full time. In the learning domain, an index is presented measuring women's share of degrees granted in fields traditionally the 'preserve' of particular genders. A training participation index shows the extent of employed women's participation in employer-supported or job-related training. Finally, an 'occupational return on education' index examines "gender imbalance in the return on investment in education in terms of working in a high-level job".

Sharpe (2004) believes that these indicators have a number of strengths, in that the objectives pursued in their development were clearly defined, and the framework for approaching economic gender equality (i.e., its focus on income, work and learning) is well developed. He suggests that "This framework is appropriate for application to other groups such as Aboriginals, visible minorities and the disabled." (p. 32)

He highlights the importance of the ***framework*** for the development of these indicators having specified that a number of considerations be reflected in them: that they cover "key areas that affect women's economic autonomy including income and earnings, paid and unpaid work, and education and training"; that they have a time-series dimension in order that trends be visible; that they be constructed from existing data; be for Canada and the provinces and territories; that they "reflect the situation of women with different age, education, occupation and employment characteristics"; and that they account for the presence or absence of children.

7. *CCSD Personal Security Index (PSI)*

According to Hayward (2003) this index "includes 20 indicators of economic security (job and financial security), health security (protection against threats of disease and injury), and physical safety (feeling safe from violent crime and theft). A data index, comprising 11 indicators, measures changes in peoples' objective circumstances. A perception index, comprising nine indicators, reflects subjective feelings of Canadians as captured in national opinion surveys."

CCSD releases the Personal Security Index annually.

8. *Plan Winnipeg 2020 Vision*

Plan Winnipeg 2020 Vision uses "measurable, citizen-developed, quality of life indicators to evaluate the effectiveness of city policies and progress towards sustainable development goals." A set of indicators are under development.

9. *City of Hamilton*

Environment Canada (2004) describes the City of Hamilton's 'Hamilton Vision 2020' program as "an example of a well-established community program involving citizen participation that contributes to establishing long-term policy and planning goals for the city" (p. 23) As part of that program a "Sustainability Indicators" program was developed in order to facilitate tracking of progress towards these goals and highlight where more work and attention are needed.

10. *Newfoundland Community Accounts*

"In 1998 the Province of Newfoundland and Labrador announced a Strategic Social Plan (SSP). One of the Plan's main objectives was to advance government's usage of data and information in its policy formulation and decision making. In response, the Newfoundland and Labrador Statistics Agency formed a partnership with Memorial University, which led to the development of the Community Accounts (CAs). The Web-based system provides data and social and economic indicators at the level of 400 communities, 80 local areas (Statistics Canada geography), 20 economic zones, SSP regions, health and education administrative areas and geographies used by the Federal Department of Human Resources and Development (HRDC). It also allows users to extract information based on their own geographies of choice and provides a wide range of data-handling tools that are easy to use. The best part of all is that, although the system was designed to accommodate the needs of academic and government researchers, it was also developed to be accessible and helpful to citizens. Reaction since its implementation indicates that the CAs have been highly successful and valuable to all intended users. The CAs have great potential to be used for a wide variety of purposes."

The Community Accounts may also be regarded as a database whereby stakeholders in the Province of Newfoundland and Labrador can verify the data which is used to prepare the provincial 'social audit'. Specifically, in the Strategic Social Plan the province undertook to conduct an exercise assessing the evolution of socio-economic indicators in three outcome areas: general well-being, employment and economic security, and community stability. Under these three headings, a set of possible indicators for inclusion were laid out as follows:

Well-being

- health status
- family status (adequate nutrition, economic security, safety)
- access to early childhood programs and services and school and post secondary education
- human resource development
- education status (literacy, attainment and achievement levels)

Employment and economic security

- employment rates
- labour force participation rates
- labour force profile

- the duration of employment
- sectoral and geographic distribution of employment
- employment in the community based sector
- economic status (income levels, poverty rates, reliance on transfer payments)
- social assistance caseloads

Community stability

- population dynamics
- community safety
- regional and community distribution of resources
- capacity of community and voluntary agencies
- civic participation and involvement
- access to recreation and cultural pursuits
- access to other essential services

When *From the Ground Up* was published, the indicators employed were grouped under a range of headings, many taken from the vision statement of the Strategic Social Plan:

> "*Healthy, educated, distinctive, self-reliant and prosperous people living in vibrant, supportive communities within sustainable regions....*"

The headings were: 'Healthy people', 'Educated People', 'Prosperous and self-reliant people', 'Vibrant, Distinctive and Supportive Communities', 'Safe communities', 'Sustainable Regions: Demographics', 'Cross Linkages', and 'Quality of Life'.

11. Glace Bay GPI Research Society

In February 2000, Canada's National Crime Prevention Centre (NCPC) recognized that the kind of GPI indicators developed by GPI Atlantic and others (see above) could help communities identify the social and economic causes, costs and impacts of crime, and develop annual benchmarks of progress towards creating more peaceful and secure communities. With funding from the NCPC's Business Action Program, a (second) community-level GPI project was launched in March 2000 in Glace Bay, a former coal mining town with high levels of unemployment in industrial Cape Breton.

Funding from the Canadian Population Health Initiative and the Canadian Rural Partnership made it possible to administer 2,000 surveys in Glace Bay.

Beginning in the fall of 2001, the data were entered into a new database designed by Dalhousie University's Population Research Unit and St. Mary's University's Time Use Research Program.

The Glace Bay community can access this data via a specially created Society. Indeed GPI Atlantic stress that one of the main outcomes from the Glace Bay pilot project is a better understanding of "the importance of the process of communicating the results [of the initial

survey] as a means to enlist the community participation that is essential to the long-term and expanding success of this project...." (Poetschke, op. cit., p. 8)

The Glace Bay GPI Society was established in 2003 with the objectives of providing the community of Glace Bay with community-level data on a wide variety of indicators on progress and well being; to collect, analyze and disseminate results of the GPI Glace Bay survey; to build partnerships between community, university, and potential funding partners; to be an advocate for information systems that would support local level planning and development, and to be an advocate for regular follow up surveys to measure progress on identified priorities within the indicators.

12. Department of Indian Affairs and Northern Development

The Department of Indian and Northern Affairs produces an annual report entitled *Northern Indicators*. The latest (2003) edition is described as "the 32nd issue in a series of reports which present a profile of the social, economic, and public finance characteristics of Yukon, Northwest Territories and, where possible, Nunavut. The primary data source for the publication is Statistics Canada. Areas covered include demography, income, labour force, education and social indices.

13. Alberta Round Table on the Environment and the Economy

The indicators project was initiated by the Alberta Round Table on the Environment and the Economy (ARTEE) in 1992 after the ARTEE identified nine basic 'vision elements' for Alberta's future sustainability. An indicator project team under the guidance of the Indicator Working Group co-ordinated a year long exercise focused on identifying indicators as laid out in a project plan. This plan also contained provisions for a literature survey and consultation with ARTEE members, specialists and 'other stakeholders'.

A preliminary database of more than 850 measures was compiled based on polls and interviews with ARTEE members and different stakeholder groups—a list which was subsequently reduced to 59. About two-thirds of these were focused on environmental concerns; about half the remainder focused on economic concerns (including 'human capital') and the rest on 'quality of life'-type concerns.

Although it was widely regarded as an exercise in developing indicators of sustainability, many of the indicators selected focus on issues other than 'sustainability' per se (i.e., urban and rural crime rates; job satisfaction).

14. City of Montréal

As part of the Vivre Montréal en santé project, the City of Montréal created a set of neighbourhood profiles using indicators under the broad headings of 'community life' and 'framework for living'. Specific categories of indicator addressed included: [43]

43. See City of Montréal, 1993 for further details.

- Local democracy
- Community dynamics
- Joint action
- Socialization
- Neighbourhood economy
- Town planning
- Environment
- Urban safety

4.3 Single focus indicators

Health, social, economic indicators

1. Campaign 2000

Focuses on child poverty.

2. CPRN quality employment indicators

According to Sharpe (2004) "The Canadian Policy Research Networks (CPRN) maintains a website…which contains indicators of work conditions and environment. The website offers 35 indicators for Canada regrouped under 11 themes: communication and influence, personally rewarding work, security, job design, environment, training and skill development, pay and benefits, job demands, employee-supervisor relationship, work schedules, and special indicators (PCs at work and union indicators). The data are provided in the form of charts. Additional indicators are also available depending on the theme." (Sharpe, p. 66)

3. National Council on Welfare

Welfare Incomes is a regular publication produced by Canada's National Council on Welfare which tracks the annual welfare incomes of four typical households in each of Canada's provinces and territories. Families tracked are: a single employable person, a single person with a disability, a single parent with one child aged two, and a couple with two children aged 10 and 15. The latest edition of *Welfare Incomes* (*Welfare Incomes 2003*) was released in July 2004; the National Council on Welfare has published similar estimates since 1986.

4. Health indicators for federal/provincial/territorial ministers

Two recent initiatives have taken an indicators-based approach to examining Canadians' health.

In September 2000, First Ministers issued a Communiqué on Health in which they agreed to provide clear accountability reporting to Canadians, beginning in 2002. As part of that agreement, 14 areas (under 3 broad headings) for comparable health status and health system performance indicator reporting were identified:

1. Health status

Life expectancy; Infant mortality; Low-birth rate; Self-reported health

2. Health outcomes

Change in life expectancy; Improved quality of life; Reduced burden of disease, illness and injury

3. Quality of service

Waiting times for key diagnostic and treatment services; patient satisfaction; hospital re-admission for selected conditions; access to 24/7 first contact health services; home and community care services; public health surveillance and protection; health promotion and disease prevention.

A set of comparable health indicators was released in October 2002. A new set of such indicators was released in November 2004.

A second set of health indicators arose from the Health Roadmap Initiative. In 1998, more than 500 health administrators, researchers, caregivers, government officials, health advocacy groups and consumers were brought together to identify health information needs. At the follow-up National Consensus Conference on Population Health Indicators, held in May 1999, a set of health indicators was agreed upon. Indicators fell under one of four broad headings: health status, non-medical determinants of health, health system performance, and community and health system characteristics. Under these headings, examples of indicators include:[44]

1. Health status

Well-being (i.e., self-rated health), health conditions (i.e., body mass index, diabetes), human function (i.e., activity limitation, disability-adjusted life expectancy), and deaths (i.e., infant mortality)

2. Non-medical determinants of health

Health behaviours (i.e., smoking status), living and working conditions (i.e., low income rate, decision latitude at work), personal resources (i.e., life stress), and environmental factors (i.e., exposure to second-hand smoke)

3. Health system performance

Acceptability (patient satisfaction), accessibility (i.e., screening mammography, women 50-69), appropriateness (i.e., caesarean sections), effectiveness (i.e., pneumonia and influenza

44. See Statistics Canada (2004) for more details.

hospitalizations), efficiency (i.e., expected compared to actual stay), and safety (i.e., in-hospital hip fracture)

4. Community and health system characteristics

Community (i.e., population density), health system (i.e., inflow/outflow ratio, contact with dental professionals), and resources (i.e., health expenditure).

Environmental indicators

1. Environment Canada

Environment Canada's National Indicators and Reporting Office (NIRO) put out two publications containing indicators of the state of the environment.[45] The most recent publication of the *entire* National Environmental Indicator Series can be found in 'Environmental Signals: Canada's National Environmental Indicator Series 2003'.

The most recent set of 12 *key* indicators (on 9 themes) is published in 'Environmental Signals: Headline Indicators 2003'. These themes are water use, wastewater treatment, air quality, climate change, acid rain, stratospheric ozone depletion, wildlife and wilderness, toxic substances, and waste and recycling.

These two reports "also provide baseline information to support and complement the core set of high-level indicators being developed by the NRTEE." (see Environment Canada, 2002, p. i)

Environment Canada is also working on the development of a Canadian Information System for the Environment (CISE), aimed at making it "increasingly easy for organizations and communities to seek out environmental information and compile their own, locally relevant, environmental indicators report."

Environment Canada has also produced—in collaboration with the United States' Environmental Protection Agency, a report entitled 'State of the Great Lakes 2001'.

Environment Canada's Pacific Yukon Region produced 'Pacific and Yukon Region Environmental Indicators', their Atlantic Region produced the '1994 State of the Environment Report in the Atlantic Region'.

Environment Canada was the lead agency responsible for producing 'The State of Canada's Environment—1996'.

45. NIRO is also responsible for administering the State of the Environment (SOE) Infobase. In addition, NIRO has produced—either alone or in collaboration with other organizations—a number of reports, including 'Ecological Assessment of the Boreal Shield Ecozone', 'Nutrients in the Canadian Environment: Reporting on the State of Canada's Environment' , 'The State of Municipal Wastewater Effluents in Canada'.

2. *City of Kelowna*

According to Environment Canada (2004), "In British Columbia, the Kelowna State of Environment Reporting program is meant to define base conditions and measure progress with respect to environmental issues of air quality, drinking water quality and consumption, wastewater quality, storm water quality, surface water quality, groundwater quality, land use, watershed management, and solid waste.[46] The framework is a direct, issue-based structure focusing on local concerns. Indicators are based on local or provincial standards and compatibility with other geographic levels is not given high priority. On the other hand, the local situation is compared to other cities nationally and even internationally. Links are also made to broader global environmental issues. An Environmental Indicators web site complements the State of the Environment Report."[47]

3. *City of Calgary*

The City of Calgary published a *State of the Environment Report* in 2002, and also publishes *Sustainable Calgary*. According to Hayward (2003, p. 11) "More than 2000 Calgarians, concerned about the narrow set of economic indicators used in city decision-making, participated in workshops to select 35 social, environmental, and economic indicators...."

4. *Arctic Monitoring and Assessment Program*

The Arctic Monitoring and Assessment Program (AMAP) published 'AMAP's new State of the Arctic Environment Report describing the pollution status of the Arctic—up...' as well as 'Arctic pollution issues: a state of the Arctic environment report'.[48]

5. *Government of Nova Scotia*

In December 1997, the Government of Nova Scotia completed a draft report entitled *A Collaborative Framework for State of the Environment Reporting in Nova Scotia*. The draft report acknowledged that the province of Nova Scotia had, by the passage in 1995 of a new Environment Act, committed to reporting on a regular basis to the people of Nova Scotia on the quality of their environment. In July 1998, the Nova Scotia Department of the Environment published The State of the Nova Scotia Environment. The report covered air quality, water resources, and waste-resource management. The report "attempts to answer the following questions regarding the environment: What is happening in the environment? Why is it happening? Why is it significant? What are we doing about it?"

6. *Canadian Council of Forest Ministers*

The framework for the Canadian Council of Forest Ministers' Criteria and Indicators of sustainable forest management was developed in response to goals stated in Canada's 1992

46. City of Kelowna state of the environment report, 1998.
47. Environmental indicators: monitoring trends in the City of Kelowna.
48. Discussed in Environment Canada (2004), with link to AMAP website.

National Forest Strategy and commitments made at the UN Conference on Environment and Development (UNCED) held in June 1992. In 1993 the CCFM established the Steering Committee on Criteria and Indicators of Sustainable Management of Canada's Forests. Supported by a science panel and a technical committee, the steering committee embarked on a process involving officials and scientists as well as experts from the academic community, industry, non-governmental organizations, the Aboriginal community and various interest groups. In 1995, the CCFM released a Criteria and Indicators framework in a document entitled 'Defining Sustainable Forest Management: A Canadian Approach to Criteria and Indicators'. A preliminary assessment of the indicators was conducted in 1999, and—based on that assessment—the CCFM approved a review of the 83 indicators in the framework in August 2000. A review was initiated in September 2001, and employed a list (developed by the CCFM) of five attributes that each revised indicator should possess. The number of indicators was reduced, and 36 indicators in the revised framework that relate to values, issues or concerns of great interest to Canadians have been identified as Core Indicators. Targets, objectives, thresholds or baselines are defined for the indicators "where they are obvious...."

7. Mackenzie River Basin Board

The Mackenzie River Basin Board published its State of Aquatic Ecosystem Report.

8. Government of Saskatchewan

State of the Environment (SOE) reporting was introduced by the provincial government in 1990 "to monitor ongoing environmental conditions and report on progress towards sustainable development...." The Government of Saskatchewan views 'state of the environment' reporting as, in essence, attempting to answer five key questions: *What is happening in the environment? Why is it happening? Why is it significant? What is being done about it? What has happened since the last report?* SOE reporting in Saskatchewan has involved a variety of approaches. The first SOE report, produced in 1991, was an initial attempt at identifying general environmental trends and potential issues or problems affecting renewable and non-renewable resources in the province. It was largely a descriptive document. The second—released in April 2003—focused on approaches to environmental reporting, and the third combined three basic approaches to reporting: an ecosystem approach, a stress-condition-response approach and a sector approach. Each subsequent report focused on one of each of the four different ecozones identified by Saskatchewan Environment and Resource Management, and the 2003 report took an overall, province-wide perspective. Aspects of the environment covered included air, land and soils, water, and biodiversity. The 2003 report included a selection of indicators designed to measure each of these aspects.

9. Agriculture and Agri-Food Canada

The Agri-Environmental Indicators Project was initiated in 1993 by Agriculture and Agri-food Canada—the federal government department charged with responsibility for Canada's agriculture sector—in recognition of the fact that "If more sustainable agriculture is to

become a reality, objectives and indicators of progress are needed to guide these efforts...." In 2000, 'Environmental Sustainability of Canadian Agriculture: Report of the Agri-Environmental Indicators Program' was released—a publication designed to complement and integrate the information presented in related departmental publications such as 'The Health of Our Soil' (1995), 'The Health of Our Air' (1999) and 'The Health of Our Water' (2000). Areas covered by the report included environmental farm management, soil quality, water quality, "agroecosystem greenhouse gas emissions", agroecosystem biodiversity, and production intensity (including energy use).

10. Canadian Council of Ministers of the Environment

The Canadian Council of Ministers of the Environment publish a set of indicators identifying changes in Canada's climate over the past 50 to 100 years. Measures are based on sea levels, river and lake ice, plant development, and the incidence of extreme weather events.

4.4 Research centres, other initiatives, resources

1. York Centre for Applied Sustainability, York University

As highlighted by Hayward (2003, p. 10), the Sustainability Reporting Program website includes links to "a number of other [sustainability] measuring projects now in operation in Canada and in other countries...."

2. Centre québécois de développement durable

Centre québécois de développement durable addresses issues of sustainable development in Quebec. A recent report discusses indicators for the Saguenay-Lac-Saint-Jean, and includes a discussion of the Pressure-State-Response framework. See www.cqdd.qc.ca.

3. Institute for Social Research, York University

Researchers at York University's Institute for Social Research were involved in the development of the Community-Oriented Model of the Lived Environment (COMLE) model of Quality of Life. In particular Judy Bates, Robert Murdie and Darla Rhyne developed the COMLE approach for the Canadian Mortgage and Housing Corporation's Centre for Future Studies in Housing and Living Environments, for whom they also prepared an annotated bibliography (Bates, Murdie and Rhyne, 1996).

4. Saskatoon Community-University Institute for Social Research (CUISR)

The Community-University Institute for Social Research is sponsoring a 'Quality of Life Research Project'. The City of Saskatoon, University of Saskatchewan and community-based NGOs are developing quality of life indicators in order to adopt a model to monitor quality of life in Saskatoon. The City of Saskatoon's Planning and Building Department includes these indicators in neighbourhood profiles that rate progress on issues such as affordable housing and the incidence of sexually transmitted disease.

5. Quality of Life Research Unit, University of Toronto

According to Hayward (2003) "The research unit [part of the Centre for Health Promotion at the U of T] developed the Quality of Life Profile considering both the components and determinants of health and well-being in its measurements. It draws upon a conceptual model that is consistent with the World Health Organization's definitions of health and health promotion. The profile emphasizes individuals' physical, psychological, and spiritual functioning; their connections with their environments; and opportunities for maintaining and enhancing skills."

6. Atlas of Canada Online

The Atlas of Canada Online compiled, transformed and analyzed indicator data to generate three quality of life maps—one for each of three broad areas: social, economic and physical environment. A map combining these three components was also produced. A fifth map was prepared in partnership with the Canadian Policy Research Networks' Quality of Life Indicators Project, and shows various national indicators of quality of life.

7. Centre for Community Enterprise

The Centre for Community Enterprise has published a survey of the use of development benchmarks and indicators for applications "to community economic development in Aboriginal settings" (see Lewis and Lockhart, 2002).

8. Institute for Social Research and Evaluation, UNBC

The Institute for Social Research and Evaluation at the University of Northern British Columbia (UNBC) is headed by Professor Alex Michalos, editor of the journal *Social Indicators Research*. Its research is described on the Institute's website, which contains a large number of useful links to various resources.

5. International indicators

This section examines some international indicators of relevance as comparators to the Canadian experience.

1. Measuring Ireland's Progress

In 2003, Ireland's Central Statistical Office (CSO) published *Measuring Ireland's Progress*, containing a set of 108 indicators covering 10 specific 'domains' in the economic, social and environmental areas. The genesis of this report is an interesting one; a request to the CSO to develop a set of indicators was included in *Sustaining Progress*, the social partnership agreement for 2003-2005.

The audience for which the 2-volume report was intended was perceived by the CSO as including 'Irish society generally, government and the social partners, policymakers in the Public Service, key national statistics users organizations (such as the National Economic and Social Council, the Combat Poverty Agency and the National Competitiveness Council), multinational investment corporations, and key international organizations and users' (*Measuring Ireland's Progress*, Vol. 2, p. 8).

The CSO stresses that the set of indicators in the report should be viewed as 'preliminary', that the report represents 'a first attempt' at an indicator development exercise, and that in publishing these indicators the CSO is "hoping for lively feedback from users...."

The 108 indicators included in the report are from domains listed as

1. Economy
2. Innovation and technology
3. Employment and unemployment
4. Social cohesion
5. Education
6. Health
7. Population
8. Housing
9. Crime
10. Environment

In developing indicators under these headings, the CSO largely rejected the 'composite indicator' approach, arguing that "*Composite indicators are less suitable as a measure of progress over time than single source indicators [and] often lack clear methodological consensus*...."

The CSO cites seven criteria of 'a good indicator' developed by the European Commission. Such indicators should be:

- Easily comprehensible,
- Mutually consistent,
- Comparable across jurisdictions,
- Policy relevant,
- Available in a timely fashion,
- Based on credible sources,
- Not overly burdensome on respondents.

Amongst the 108 indicators presented in *Measuring Ireland's Progress* are the exchange rate, the degree of interest rate 'harmonization', households with internet access, the average age of exit from the labour force, the ratio of students to teachers, voter turnout, the homicide rate, and urban air quality. In a number of areas, the CSO presents data illustrating national performance relative to past national performance (i.e., performance over time) as well as performance relative to other European Union members.

A pair of Appendices accompany Volume 1 (the volume containing the indicators—Volume 2 contains some methodological discussion and comparisons of the chosen indicator set with sets chosen by other organizations) and give details of definitions which are important to understanding the indicators, as well as the data sources employed.

2. *Measures of Australia's Progress*

The Australian Bureau of Statistics (ABS) published the first issue of *Measures of Australia's Progress* (then called *Measuring Australia's Progress*) in April 2002; the latest issue was published in April 2004.

ABS is explicit in acknowledging that

"*Although many regard Gross Domestic Product (GDP) as an important measure of progress, there are many who believe that it should be assessed in conjunction with other measures of progress. This is the prime reason the ABS looked for an alternative approach.*"

The report includes a section on the *framework* used by ABS in arriving at the set of indicators which they publish. As opposed to a 'framework' in the sense of a set of attributes or dimensions by which indicators differ (a taxonomic tool) this 'framework' consists of a description of the process by which they arrived at their set of indicators—a process which involved answering three questions:

1. What do we mean by progress overall?

2. How can we describe progress in the major domains (i.e., social, economic and environmental) and what dimensions of progress should be included?

3. What headline indicators best encapsulate progress in each dimension (noting that some desirable indicators need to be developed in the future or are too subjective for the ABS to use in the foreseeable future)?

In developing this framework, the ABS is sensitive to a number of considerations, and is consequently at pains to stress

- that breaking down the set of factors which impact the quality of life into separate categories should not be viewed as suggesting that factors in these separate categories do not interact, and
- that—ultimately—any assessment of whether changes in various factors constitutes 'progress' can only be subjective.

The Australian Bureau of Statistics arrived at their 'suite' of indicators via a series of steps. First, they arrived at a definition of what constituted 'progress'; progress is synonymous with life getting better, is multidimensional, and subjective. They go on to identify three 'domains' which would need to be evaluated in order to arrive at an assessment of whether life is getting better; the economic, environmental and social domains. They then ask the

question 'what is progress?' again for each of these categories, characterizing environmental progress as 'a reduction of threats to the environment and improvements in the health of our ecosystems', economic progress as enhancing the nation's income whilst maintaining national wealth, and social progress as consisting of increases in the wellbeing of the population, better social cohesion and enhanced democratic rights. After going on to list the dimensions whereby progress in each of these senses can be characterized (and explaining why each of these dimensions is important for progress in each sense) they explicitly identify indicators for each dimension.

Overall then, this framework can be described as a multi-step process of defining progress in a sequence of increasingly focused areas.

ABS arrives at a set of 'headline progress indicators' and 'supplementary progress indicators'. The former consists of statistics on life expectancy at birth, people aged 25 to 64 with a vocational or higher education certificate, the unemployment rate, real net national disposable income per capita, the average real equalized average weekly disposable income of households in the second and third deciles of the income distribution, real national net worth per capita, multifactor productivity, threatened birds and mammals, the proportion of water management areas where use exceeded 70% of sustainable yield, net greenhouse gas emissions, victims of personal and household crimes, and a number of other indicators.

3. UN Human Development Index

Developed with input from Armatya Sen, "The Human Development Index produced by the United Nations Development Programme (UNDP, 2001) is a composite index with three equally weighted components: health, education and income. Each component is expressed as the ratio of a country's performance to the range of between the minimum and maximum outcome observed in the international data. The health component is captured by life expectancy, the education component by the adult literacy rate and the combined primary, secondary and tertiary gross enrolment rates (two-thirds of weight given to the former and one-third to the latter), and income by the logarithm of GDP per capita expressed in terms of purchasing power. Because the logarithm of income is used, income above $10,000 per capita has little effect on the HDI. " – (Osberg and Sharpe)

The news that Canada had slipped to 8th in the UN HDI rankings was widely covered when it broke in early July 2003, as was Canada's more recent return to 4th place.

4. Redefining Progress's (Original) Genuine Progress Indicator

"The GPI produced by Redefining Progress is an index of 20 aspects of economic life ignored by GDP. It starts with personal consumption expenditures, makes an adjustment for income distribution, and then adds or subtracts categories of spending based on whether they enhance or detract from well-being. Additions are the value of time spent on household work, parenting and volunteer work; the value of consumer durables; the services of highways and streets. Subtractions are defensive expenditures due to crime, auto accidents and pollution; social costs such as the costs of divorce, household costs of pollution and loss of leisure; and

depreciation of environmental assets and natural resources, including loss of farmland, wetlands, old growth forests, reduction in the stock of natural resources, and the damaging effects of wastes and pollution. All categories are expressed in dollars for aggregation purposes...the GPI trends a strong downward bias...." – (Osberg and Sharpe, footnote 3)

Colman and Messinger (2004) make the following remarks on the Genuine Progress Indicator as discussed in Cobb, Halstead and Rowe's seminal October 1995 *Atlantic Monthly* article:

"[Following the publication of this article, t]he Chief Statistician of Canada, Ivan Fellegi, requested one of his top staff members, Hans Messinger...to replicate the Genuine Progress Indicator for Canada and to analyze its methods. Mr. Messinger concluded that the basic intent and goal of the Genuine Progress Indicator was valid, as was its critique of the limitations of GDP-based measures of progress. However, in his detailed analysis for Statistics Canada, Messinger also exposed some fundamental methodological errors in the ways the measure was calculated, including the confusion of stocks and flows and built in biases towards downward trends, which distorted the results. Messinger's critique was the starting point of GPI Atlantic's [efforts.] "

6. *Conclusion*

In the main body of this paper, we have briefly highlighted more than 40 initiatives aimed at developing "key indicators"; Appendix A lists many more.[49]

In addition to simply highlighting and listing these initiatives, this paper has also sought to provide some background context against which their development may be viewed.

To this end, it has outlined the history of the conceptualization and measurement of national economic activity (in particular, national income) and has highlighted a number of criticisms which have surrounded that measure since its inception in the 17th century. To a large extent, the growth of agencies and organizations devoted to the development of key *comprehensive* indicators (such as the Genuine Progress Indicators) may be regarded as a sign that these criticisms continue to resonate with some.

This paper has also sketched the various frameworks within which different indicator practitioners have sought to locate their development work, and has drawn on that discussion to classify a range of comprehensive, non-comprehensive, and single focus indicators according to the nature of the organization which has produced them, their scope, area of focus, and the degree of community involvement in their development.

49. Readers interested in a more in-depth view of indicators in Canada should consult one of the following survey papers: Sharpe (1999, 2004), Bates et al. (1996), Maclaren (2001), Hayward (2003) or Reed and Yalnizyan (2000) on 'Quality of Life' indicators and/or indicators of economic and social well-being; Environment Canada (2004) or Hardi et al. (1997) on 'state of the environment' and sustainability indicators; Stratos Inc. (2003) on corporate sustainability reporting.

Indicator work is still very active in Canada, and the ideas underlying the indicator concept appear to have entered the national political consciousness.[50] A large number of groups are engaged in such work, but there appears to be a growing sense amongst some practitioners that the indicator 'movement', in general, would benefit from coordinating their ongoing projects. Specifically, as Hayward (2003) points out:

> "*The National Workshop on Quality of Life Research held in Halifax in December 2002 and the February 2003 CPRN Ottawa workshop... recognized the plethora of quality of life/well being research initiatives taking place in Canada covering a range of areas such as environment, health, economic performance, and social conditions. Participants in these workshops explored whether it was realistic to coordinate this work in order to influence public policy. Towards this end, they decided to work toward developing a research program that would develop a common quality of life framework, and also a set of core indicators....*" (p. 1)

As recently as May 11-12, 2004, a large number of indicator practitioners met in Toronto convened under the auspices of the Atkinson Charitable Foundation, who state on their website:

> "*The purpose of this conference was to provide an opportunity of indicator researchers and practitioners from universities, governments and the community along with leaders from community based organizations who see value and merit in the potential for using indicators in their communities to develop a draft framework for the creation of a Canadian Index of Wellbeing....*"

Different national statistical agencies have engaged in the development of the types of "key indicators" considered in this paper to different degrees. Some agencies have—to this point—been content to act as a provider of data to external organizations involved in indicator construction. In contrast, both the Australian Bureau of Statistics and the Irish Central Statistical Office have developed "flagship" publications designed to measure "progress" across a broader range of fields than those included in traditional economic statistics. In deciding to carry out this kind of exercise, both of these agencies have clearly decided that the benefits of doing so (in terms of better informed social and political dialogues in their societies) outweigh any associated costs.

In contrast, Statistics Canada has not as yet produced a similar publication, despite having carried out a number of experiments in extending the national accounts. Statistics Canada has contributed to this process by supplying the data needed by those who produce sets of indicators on the economy, health and the environment, amongst others. But they have avoided themselves holding out a particular set of indicators as providing the definitive guide as to whether "progress" is being made in a particular area, or in weighting up individual indicators to provide one aggregate super indicator. It has responded to the recent recommendations by the National Round Table on the Environment and the Economy (NRTEE) and is collecting series that the NRTEE has recommended. It is also supporting the efforts of the Canadian Institute for Health

50. On June 23rd 2003, Canada's House of Commons adopted the *Canada Well-Being Measurement Act,* stating that "...in the opinion of this House, the government should report annually on a set of social, environmental and economic indicators of the health and well-being of people, communities and ecosystems in Canada."

Information (CIHI) to develop health indicators. In the course of this exercise, Statistics Canada will partner with Environment Canada.

At the same time, Statistics Canada is actively involved in the ongoing revisions to the international standards laid out in the System of National Accounts (SNA). In the past, such revisions have acknowledged concerns regarding the conceptual basis for systems of national accounts, and outlined procedures for the development of 'satellite' accounts, and it may be interesting to address the following question:

> *"If we had a good, well-maintained set of extended national accounts, that took into account leisure time, household work, environmental assets, human and social capital (perhaps with a number of variants to reflect the uncertainties inherent in valuing some of these concepts) would a perceived need for 'indicators' still arise?"*

In answering this question, it is important to recognize that many groups engaged in the production of 'alternative' indicators are attempting to remedy what they perceive to be a lack of profile for particular issues. As long as some existing "headline figure"—such as GDP as currently measured—continued to enjoy a higher profile, such groups would be unlikely to be happy with the suggestion that 'their' issue was addressed in a set of satellite accounts. Indeed the very suggestion might be regarded as symptomatic of the marginalization of their concerns.

What about 'extension' in the sense of modifications to the measurement of the important aggregates in the 'core' accounts? While some might argue that such a set of accounts which embodied such modifications would obviate the need for many of the kind of indicators we have examined in this report, at least at the national (and—possibly—provincial) level, others would be likely to point out that there might be little agreement on exactly what constitutes a necessary and sufficient degree of extension. Military expenditures might be regarded by some as intermediate, and by others as a form of spending which constitutes a 'bad' rather than a 'good'. In addition, insofar as preferences differ by locality, the ideal degree of extension will also differ.

> *"[In 1994] the Clinton Administration proposed...that resource depletion be subtracted from GDP...[but at] a House Appropriations Committee hearing in April 1994 two representatives from coal states pounced on [Commerce Department] staff....Congressman Alan Mollohan of West Virginia finally got to the heart of the matter. If the national accounts were to include the depletion of coal reserves and the effects of air pollution (which would be added eventually), he said, "somebody is going to say...that the coal industry isn't contributing anything to the country"..."* – (Cobb, Halstead and Rowe, 1995)

The problem is that, as the above anecdote illustrates, statistics and indicators are inherently controversial. Most statistical agencies aspire to produce data which are robust (in the sense of being free of subjective decisions or value judgements) and not to claim they know how to weight individual series when there is little objective guidance on how to do so.

Despite this, some continue to argue that national statistical agencies are in a unique position to be a "force for good" in the development of "key indicators" such as those which have been

discussed in this paper. Many have a reputation for operating free of political interference, and—in consequence—the statistics which they release enjoy a high degree of credibility. Insofar as those agencies' reputations are well-deserved, the enhanced credibility which will be associated with any "key indicators" which they develop is to be welcomed. Insofar as non-credible indicators are at best pointless, and at worst represent a considerable waste of resources, it is presumably desirable that indicators be credible if they are to be produced at all.

Having said that, many of the indicators discussed in this report are produced by organizations which themselves enjoy a high degree of credibility, and in some ways national statistical agencies' desire to protect their reputations for impartiality might well be perceived as a drawback from the perspectives of some of these groups. Such national statistical agencies may be unwilling to couch releases in the kind of "headline-grabbing language" which non-governmental groups might feel was warranted in order to draw attention to the issue(s) addressed by the indicators. In addition, indicators with a particular focus may be lost in the output of the wide range of information which is typically produced by a national statistical agency.

On the other hand, if the desire of a group involved in indicator production is primarily to educate the public about a particular issue, it must be recognized that national statistical agencies often possess well developed mechanisms for the dissemination of statistical information.

Statistical "key indicator" series produced by official agencies may also have the virtue of longevity. Many of the organizations listed in the main body of this report enjoy rather tenuous funding, and the production of "key indicators" on an ongoing (rather than "one off") basis may prove difficult over the longer term. In contrast, while national agencies can also be subject to funding vagaries and budget cuts, they are usually able to shift the focus of data collection programs in such a way as to protect key areas.

Appendix A: Additional reports and initiatives

This section lists a number of reports, initiatives and groups which are not covered in the main body of this report. Where possible internet URLs are included in order to enable readers to examine these reports and initiatives for themselves.

The Department of Geography at the University of Toronto includes summaries of a large number of these reports—see www.geog.utoronto.ca/CommunityReporting/SOCsummaries.htm

The Institute for Social Research and Evaluation at the University of Northern British Columbia also contains links to a number of the papers listed below—see http://web.unbc.ca/isre/pgpapers.html

Canada Well-Being Measurement Act, Sustainability Project, 7th Generation Initiative www.SustainWellbeing.net/index3.html

David Thompson Health Region (DTHR) www.dthr.ab.ca

Des indicateurs pour évaluer les projets québécois de Villes et villages en santé: la nécessité de faire des choix (see O'Neill and Cardinal, 1992)

Sustainable Calgary State of Our City Report 1998, 2001 www.sustainablecalgary.ca

Quality of Life in Jasper http://web.unbc.ca/isre/jasper.html

Gros Plan sur Mercier-Est/Anjou

The Fraser Basin Management Board Report Card 1995, 1996

Quality of Life in Prince George 1997

Health and Quality of Life in Bella Coola http://web.unbc.ca/isre/pgpapers.html

Quality of Life in Greater Moncton 1996

Quality of Life in Brant County 1998

The Don Watershed Report Card 1997

Guelph State of Sustainability Report 1998

Halton State of the Environment and Quality of Life Report 1997

Hamilton Wentworth Sustainability Indicators 1996

Hamilton-Wentworth Vision 2020 www.vision2020.hamilton_went.on.ca/indicators/index.html

Humber Watershed Sustainability Report 2000

Quality of Life in North Bay 1998

Quality of Life in Ontario 1997

Ottawa Sustainability Report Bulletins: January 1998, March 1998 and March 1999

Quality of Life in Ottawa-Carleton 1999

Ottawa Sustainability Report 2000

Quality of Life in Peterborough 1998, 2000

Quinte Quality of Life Report 2000

Scarborough State of the City Report 1997

Quality of Life in Thunder Bay 1999

Toronto State of the City Report 1993, 1997

Toronto Neighbourhood Profiles 1995

Report Card on the Quality of Life in the Lakeshore Area (Toronto) 1999

Lawrence Heights and South Riverdale (Toronto) Community Reports 1997

Quality of Life in Toronto 1998

Waterloo Region Quality of Life Index 1998

Wellington Dufferin Guelph Community Well Being Report 1999

Woolwich Community Report

Ottawa "report card" at www.ottawa2020.ca

Sudbury Round Table on Health, Economy and Environment www.sudburyroundtable.com

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